Computer algebra independent integration tests

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

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Contents

Chapter 1

Introduction

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

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

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.1 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12 on windows 10.
3. Maple 2020 (64 bit) on windows 10.
4. Maxima 5.43 on Linux. (via sagemath 8.9)
5. Fricas 1.3.6 on Linux (via sagemath 9.0)
6. Sympy 1.5 under Python 3.7.3 using Anaconda distribution.
7. Giac/Xcas 1.5 on Linux. (via sagemath 8.9)

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 99.27 (543)	% 0.73 (4)
Mathematica	% 99.09 (542)	% 0.91 (5)
Maple	% 56.49 (309)	% 43.51 (238)
Maxima	% 40.04 (219)	% 59.96 (328)
Fricas	% 39.85 (218)	% 60.15 (329)
Sympy	% 23.77 (130)	% 76.23 (417)
Giac	% 39.67 (217)	% 60.33 (330)

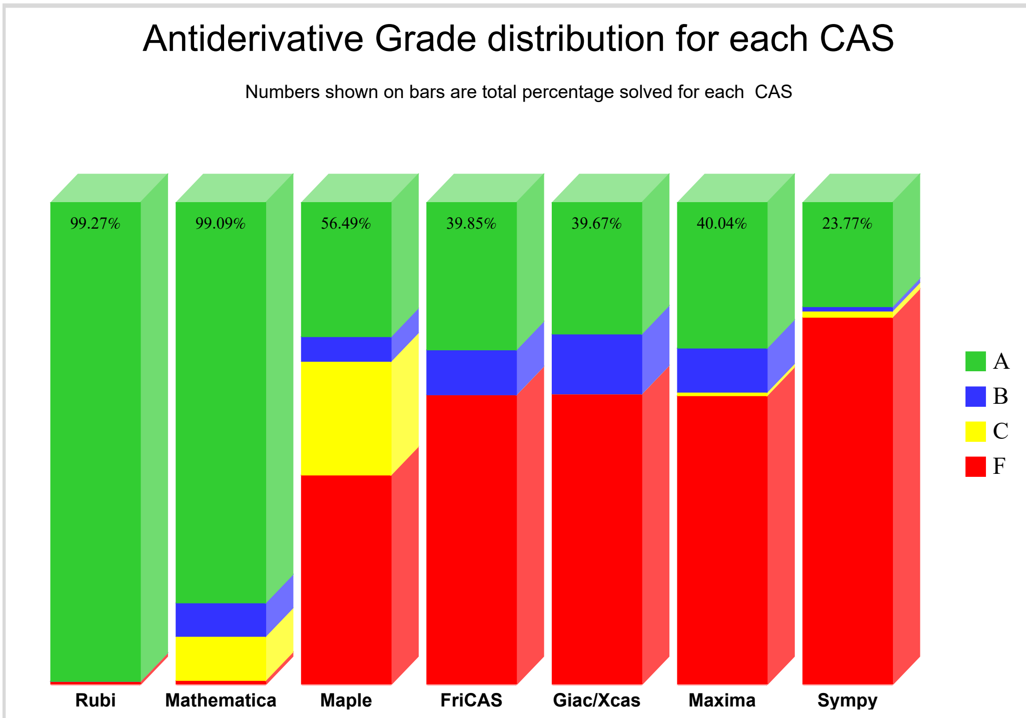
The table below gives additional break down of the grading of quality of the antiderivatives generated by each CAS. The grading is given using the letters A,B,C and F with A being the best quality. The grading is accomplished by comparing the antiderivative generated with the optimal antiderivatives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

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

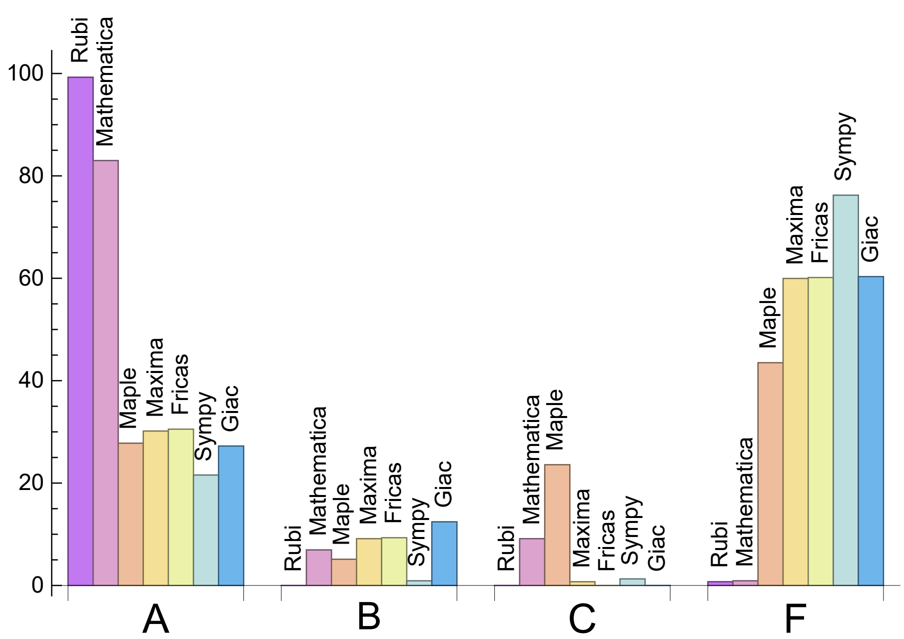
Grading is implemented for all CAS systems. Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	99.27	0.	0.	0.73
Mathematica	83.	6.95	9.14	0.91
Maple	27.79	5.12	23.58	43.51
Maxima	30.16	9.14	0.73	59.96
Fricas	30.53	9.32	0.	60.15
Sympy	21.57	0.91	1.28	76.23
Giac	27.24	12.43	0.	60.33

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



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



1.3 Performance

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

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.44	216.37	0.82	158.	1.
Mathematica	1.03	296.84	1.06	164.	0.95
Maple	0.79	1308.94	6.07	108.	1.35
Maxima	0.7	195.47	1.53	36.	1.1
Fricas	1.45	545.15	3.23	143.	2.57
Sympy	8.89	412.2	2.42	68.	1.45
Giac	0.72	683.35	3.17	54.	1.41

1.4 list of integrals that has no closed form antiderivative

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

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {233, 539}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

```
#see https://stackoverflow.com/questions/25202346/how-to-obtain-leaf-count-expression-size-in-s

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

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

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

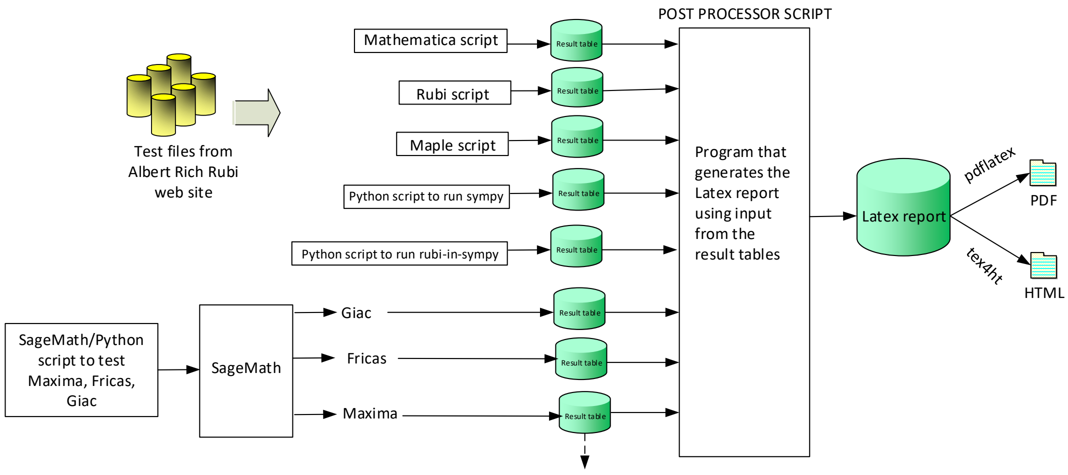
```
try:
  # 1.7 is a fudge factor since it is low side from actual leaf count
  leafCount = round(1.7*count_ops(anti))

  except Exception as ee:
         leafCount =1
```

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

1.10 Design of the test system

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



One record (line) per one integral result. The line is CSV comma separated. It contains 13 fields. This is description of each record (line)

1. integer, the problem number.
2. integer. 0 or 1 for failed or passed. (this is not the grade field)
3. integer. Leaf size of result.
4. integer. Leaf size of the optimal antiderivative.
5. number. CPU time used to solve this integral. 0 if failed.
6. string. The integral in Latex format
7. string. The input used in CAS own syntx.
8. string. The result (antiderivative) produced by CAS in Latex format
9. string. The optimal antiderivative in Latex format.
10. integer. 0 or 1. Indicates if problem has known antiderivative or not
11. String. The result (antiderivative) in CAS own syntax.
12. String. The grade of the antiderivative. Can be "A", "B", "C", or "F"
13. String. The optimal antiderivative in CAS own syntax.

High level overview of the CAS independent integration test build system

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June 22, 2018

Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

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

B grade: { }

C grade: { }

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

2.1.2 Mathematica

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

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

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

F grade: { 91, 276, 368, 373, 520}

2.1.3 Maple

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

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

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

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

2.1.4 Maxima

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

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

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

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2.1.5 FriCAS

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

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

C grade: { }

F grade: { 9, 10, 11, 12, 13, 14, 15, 24, 25, 26, 27, 28, 29, 30, 32, 40, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 73, 74, 77, 78, 79, 80, 83, 84, 86, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 145, 146, 147, 148, 149, 150, 151, 156, 157, 158, 159, 160, 161, 162, 169, 170, 171, 172, 180, 181, 182, 188, 189, 190, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 280, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 343, 344, 345, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 397, 398, 401, 411, 412, 413, 414, 415, 416, 417, 419, 424, 432, 433, 434, 438, 439, 440, 442, 443, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 489, 490, 491, 492, 493, 494, 495, 500, 501, 502, 503, 504, 505, 506, 513, 514, 515, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 16, 17, 18, 19, 20, 33, 35, 36, 37, 38, 39, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 64, 65, 66, 67, 68, 69, 70, 76, 79, 80, 82, 83, 84, 85, 87, 92, 98, 103, 108, 109, 114, 127, 132, 139, 140, 141, 154, 155, 157, 158, 160, 174, 176, 177, 178, 179, 186, 195, 234, 235, 236, 238, 239, 303, 304, 305, 332, 346, 375, 379, 380, 381, 402, 403, 404, 405, 406, 407, 420, 421, 422, 423, 425, 428, 429, 430, 431, 435, 436, 437, 441, 444, 448, 463, 464, 473, 477, 483, 484, 485, 498, 501, 504, 517, 540, 541 }

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

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

F grade: { 9, 10, 14, 15, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 40, 41, 42, 43, 48, 49, 50, 51, 56, 57, 58, 59, 62, 63, 71, 86, 88, 89, 90, 91, 93, 94, 95, 96, 97, 99, 100, 101, 102, 104, 105, 106, 107, 110, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 128, 129, 130, 131, 133, 134, 135, 136, 137, 138, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 156, 159, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 180, 181, 182, 188, 189, 190, 191, 192, 193, 194, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 237, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 376, 377, 378, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 424, 426, 427, 432, 433, 434, 438, 439, 440, 442, 443, 445, 446, 447, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 465, 466, 467, 468, 469, 470, 471, 472, 474, 475, 476, 478, 479, 480, 481, 482, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 499, 500, 502, 503, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 542, 543, 544, 545, 546, 547 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 20, 21, 33, 39, 41, 64, 65, 66, 67, 68, 69, 70, 76, 82, 85, 88, 89, 90, 91, 92, 93, 98, 99, 103, 104, 108, 109, 110, 114, 115, 116, 120, 121, 122, 127, 132, 137, 140, 141, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 165, 166, 167, 168, 174, 176, 177, 178, 179, 196, 197, 213, 214, 215, 216, 234, 235, 236, 237, 238, 239, 240, 241, 252, 268, 307, 332, 346, 350, 375, 376, 377, 381, 395, 396, 399, 400, 402, 403, 407, 408, 423, 425, 444, 445, 446, 447, 448, 449, 453, 454, 458, 459, 463, 464, 468, 469, 473, 477, 481, 484, 485, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 512, 513, 517, 540, 541, 542, 543, 544, 545, 546, 547 }

B grade: { 17, 18, 19, 22, 23, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 52, 53, 54, 55, 60, 61, 87, 94, 95, 96, 97, 100, 101, 102, 142, 175, 183, 184, 185, 186, 187, 195, 303, 304, 305, 308, 379, 380, 404, 405, 406, 409, 410, 420, 421, 422, 426, 427, 428, 429, 430, 431, 435, 436, 437, 441, 450, 451, 452, 456, 457, 486, 487 }

C grade: { }

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

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	74	129	254	192	88	124
normalized size	1	1.	0.91	1.59	3.14	2.37	1.09	1.53
time (sec)	N/A	0.035	0.008	0.06	1.256	1.842	0.628	1.301

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	61	61	57	98	169	143	68	96
normalized size	1	1.	0.93	1.61	2.77	2.34	1.11	1.57
time (sec)	N/A	0.027	0.006	0.063	1.124	1.861	0.456	1.298

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	41	41	40	67	96	99	46	68
normalized size	1	1.	0.98	1.63	2.34	2.41	1.12	1.66
time (sec)	N/A	0.018	0.004	0.056	1.09	1.857	0.433	1.137

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	21	21	21	36	42	53	26	45
normalized size	1	1.	1.	1.71	2.	2.52	1.24	2.14
time (sec)	N/A	0.008	0.004	0.064	1.126	1.834	0.372	1.174

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	15	15	15	0	23	45	12	22
normalized size	1	1.	1.	0.	1.53	3.	0.8	1.47
time (sec)	N/A	0.009	0.008	180.	1.115	2.002	0.765	1.275

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	36	36	36	54	27	113	29	51
normalized size	1	1.	1.	1.5	0.75	3.14	0.81	1.42
time (sec)	N/A	0.015	0.013	0.059	1.121	1.915	0.871	1.249

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	47	85	28	169	48	81
normalized size	1	1.	0.75	1.35	0.44	2.68	0.76	1.29
time (sec)	N/A	0.024	0.016	0.061	1.129	1.888	0.918	1.272

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	85	85	57	116	27	220	71	109
normalized size	1	1.	0.67	1.36	0.32	2.59	0.84	1.28
time (sec)	N/A	0.033	0.019	0.059	1.146	1.92	0.86	1.212

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	C	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	98	98	75	0	105	0	0	0
normalized size	1	1.	0.77	0.	1.07	0.	0.	0.
time (sec)	N/A	0.05	0.013	0.327	1.152	0.	0.	0.

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	C	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	74	74	63	0	88	0	0	0
normalized size	1	1.	0.85	0.	1.19	0.	0.	0.
time (sec)	N/A	0.038	0.01	0.276	1.173	0.	0.	0.

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	C	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	50	50	50	0	66	0	90	74
normalized size	1	1.	1.	0.	1.32	0.	1.8	1.48
time (sec)	N/A	0.031	0.009	0.342	1.216	0.	4.119	1.311

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	C	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	25	25	25	0	34	0	63	35
normalized size	1	1.	1.	0.	1.36	0.	2.52	1.4
time (sec)	N/A	0.022	0.002	0.229	1.226	0.	5.086	1.317

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	F(-2)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	49	49	58	0	61	0	92	0
normalized size	1	1.	1.18	0.	1.24	0.	1.88	0.
time (sec)	N/A	0.03	0.024	0.259	1.259	0.	143.548	0.

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	77	77	72	0	61	0	0	0
normalized size	1	1.	0.94	0.	0.79	0.	0.	0.
time (sec)	N/A	0.038	0.029	0.272	1.261	0.	0.	0.

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	85	0	61	0	0	0
normalized size	1	1.	0.84	0.	0.6	0.	0.	0.
time (sec)	N/A	0.049	0.034	0.344	1.29	0.	0.	0.

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	72	66	54	0
normalized size	1	1.	1.	0.	1.6	1.47	1.2	0.
time (sec)	N/A	0.028	0.016	0.224	1.251	2.155	42.028	0.

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	112	15871	675	1312	1059	1050
normalized size	1	1.	0.85	121.15	5.15	10.02	8.08	8.02
time (sec)	N/A	0.074	0.055	1.475	1.203	2.037	9.237	1.277

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	85	4872	381	699	527	552
normalized size	1	1.	0.86	49.21	3.85	7.06	5.32	5.58
time (sec)	N/A	0.053	0.011	0.688	1.192	1.992	3.883	1.277

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	65	65	59	130	177	311	211	240
normalized size	1	1.	0.91	2.	2.72	4.78	3.25	3.69
time (sec)	N/A	0.035	0.009	0.078	1.299	1.971	1.509	1.309

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	54	93	42	62
normalized size	1	1.	1.	1.24	1.86	3.21	1.45	2.14
time (sec)	N/A	0.015	0.006	0.059	1.11	2.066	0.567	1.243

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	63	312	0	113	0	66
normalized size	1	1.	1.	4.95	0.	1.79	0.	1.05
time (sec)	N/A	0.055	0.066	0.527	0.	1.948	0.	1.166

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	96	96	123	457	0	292	0	414
normalized size	1	1.	1.28	4.76	0.	3.04	0.	4.31
time (sec)	N/A	0.061	0.066	0.541	0.	1.963	0.	1.248

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	144	735	0	632	0	1785
normalized size	1	1.	1.07	5.44	0.	4.68	0.	13.22
time (sec)	N/A	0.081	0.095	0.543	0.	2.044	0.	1.328

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	179	179	152	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.148	0.215	0.717	0.	0.	0.	0.

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	143	143	127	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.107	0.067	0.507	0.	0.	0.	0.

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	106	0	0	0	0	0
normalized size	1	1.	0.95	0.	0.	0.	0.	0.
time (sec)	N/A	0.091	0.046	0.441	0.	0.	0.	0.

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	80	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.073	0.016	0.454	0.	0.	0.	0.

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	116	116	139	0	0	0	0	0
normalized size	1	1.	1.2	0.	0.	0.	0.	0.
time (sec)	N/A	0.101	0.116	0.526	0.	0.	0.	0.

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	163	0	0	0	0	0
normalized size	1	1.	1.04	0.	0.	0.	0.	0.
time (sec)	N/A	0.12	0.176	0.522	0.	0.	0.	0.

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	192	192	203	0	0	0	0	0
normalized size	1	1.	1.06	0.	0.	0.	0.	0.
time (sec)	N/A	0.149	0.216	0.453	0.	0.	0.	0.

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	103	0	0	143	0	0
normalized size	1	1.	1.	0.	0.	1.39	0.	0.
time (sec)	N/A	0.059	0.094	0.463	0.	2.237	0.	0.

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	88	88	88	0	80	0	0	0
normalized size	1	1.	1.	0.	0.91	0.	0.	0.
time (sec)	N/A	0.068	0.05	0.267	1.306	0.	0.	0.

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	20	20	20	26	0	50	42	31
normalized size	1	1.	1.	1.3	0.	2.5	2.1	1.55
time (sec)	N/A	0.047	0.027	0.11	0.	1.97	45.014	1.298

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	42	42	42	0	0	63	0	0
normalized size	1	1.	1.	0.	0.	1.5	0.	0.
time (sec)	N/A	0.076	0.022	1.007	0.	2.088	0.	0.

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	178	178	315	1105	531	998	620	1652
normalized size	1	1.	1.77	6.21	2.98	5.61	3.48	9.28
time (sec)	N/A	0.1	0.301	0.514	1.213	2.216	15.966	1.292

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	149	149	226	836	383	713	450	1053
normalized size	1	1.	1.52	5.61	2.57	4.79	3.02	7.07
time (sec)	N/A	0.07	0.221	0.508	1.203	2.018	8.498	1.342

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	120	120	150	585	252	474	277	581
normalized size	1	1.	1.25	4.88	2.1	3.95	2.31	4.84
time (sec)	N/A	0.054	0.142	0.508	1.264	2.164	3.951	1.214

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	101	101	138	267	148	251
normalized size	1	1.	1.11	1.11	1.52	2.93	1.63	2.76
time (sec)	N/A	0.037	0.051	0.078	1.124	1.975	1.763	1.287

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	54	93	42	62
normalized size	1	1.	1.	1.24	1.86	3.21	1.45	2.14
time (sec)	N/A	0.016	0.008	0.061	1.114	2.157	0.546	1.224

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0
normalized size	1	1.	0.98	4.14	0.	0.	0.	0.
time (sec)	N/A	0.052	0.014	0.625	0.	0.	0.	0.

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	115	215	0	150
normalized size	1	1.	0.77	4.78	1.55	2.91	0.	2.03
time (sec)	N/A	0.032	0.07	0.313	1.212	2.467	0.	1.251

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	83	633	225	579	0	408
normalized size	1	1.	0.74	5.65	2.01	5.17	0.	3.64
time (sec)	N/A	0.062	0.103	0.374	1.106	2.547	0.	1.23

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	141	110	950	406	1041	0	763
normalized size	1	1.	0.78	6.74	2.88	7.38	0.	5.41
time (sec)	N/A	0.082	0.147	0.386	1.194	2.375	0.	1.276

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	365	301	360	6770	1116	2429	1744	3220
normalized size	1	0.82	0.99	18.55	3.06	6.65	4.78	8.82
time (sec)	N/A	0.535	0.251	0.888	1.303	2.53	20.585	1.334

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	243	247	4597	748	1571	1103	1808
normalized size	1	0.85	0.86	16.02	2.61	5.47	3.84	6.3
time (sec)	N/A	0.413	0.149	0.769	1.205	2.28	9.541	1.376

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	186	144	2616	424	851	561	803
normalized size	1	1.	0.77	14.06	2.28	4.58	3.02	4.32
time (sec)	N/A	0.164	0.076	0.633	1.236	2.142	4.242	1.314

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	65	65	59	130	177	311	211	240
normalized size	1	1.	0.91	2.	2.72	4.78	3.25	3.69
time (sec)	N/A	0.039	0.014	0.076	1.209	2.07	1.407	1.165

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	194	2018	0	0	0	0
normalized size	1	1.	1.75	18.18	0.	0.	0.	0.
time (sec)	N/A	0.114	0.127	0.743	0.	0.	0.	0.

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	132	132	126	1092	0	0	0	0
normalized size	1	1.	0.95	8.27	0.	0.	0.	0.
time (sec)	N/A	0.088	0.084	0.77	0.	0.	0.	0.

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	202	233	204	1473	0	0	0	0
normalized size	1	1.15	1.01	7.29	0.	0.	0.	0.
time (sec)	N/A	0.385	0.217	0.759	0.	0.	0.	0.

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	317	347	302	1815	0	0	0	0
normalized size	1	1.09	0.95	5.73	0.	0.	0.	0.
time (sec)	N/A	0.605	0.376	0.743	0.	0.	0.	0.

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	598	598	475	30495	2277	5723	4495	7131
normalized size	1	1.	0.79	50.99	3.81	9.57	7.52	11.92
time (sec)	N/A	0.552	0.409	2.204	1.554	3.073	50.503	1.517

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	432	432	333	20417	1539	3644	2746	4039
normalized size	1	1.	0.77	47.26	3.56	8.44	6.36	9.35
time (sec)	N/A	0.384	0.213	1.743	1.881	2.562	23.691	1.358

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	265	265	201	11547	894	1925	1479	1824
normalized size	1	1.	0.76	43.57	3.37	7.26	5.58	6.88
time (sec)	N/A	0.219	0.114	1.192	1.614	2.208	9.593	1.307

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	85	4872	381	699	527	552
normalized size	1	1.	0.86	49.21	3.85	7.06	5.32	5.58
time (sec)	N/A	0.052	0.022	0.185	1.297	2.019	3.262	1.36

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	158	158	335	9538	0	0	0	0
normalized size	1	1.	2.12	60.37	0.	0.	0.	0.
time (sec)	N/A	0.177	0.217	1.01	0.	0.	0.	0.

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	190	190	410	5626	0	0	0	0
normalized size	1	1.	2.16	29.61	0.	0.	0.	0.
time (sec)	N/A	0.154	0.4	1.121	0.	0.	0.	0.

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	342	370	620	0	0	0	0	0
normalized size	1	1.08	1.81	0.	0.	0.	0.	0.
time (sec)	N/A	0.625	0.836	1.987	0.	0.	0.	0.

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	564	525	843	0	0	0	0	0
normalized size	1	0.93	1.49	0.	0.	0.	0.	0.
time (sec)	N/A	1.14	1.297	2.224	0.	0.	0.	0.

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	340	340	258	37938	1570	3646	2885	3440
normalized size	1	1.	0.76	111.58	4.62	10.72	8.49	10.12
time (sec)	N/A	0.281	0.218	2.669	1.362	2.551	19.212	1.316

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	112	15871	675	1312	1059	1050
normalized size	1	1.	0.85	121.15	5.15	10.02	8.08	8.02
time (sec)	N/A	0.071	0.03	0.452	1.351	2.103	6.321	1.297

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	503	33189	0	0	0	0
normalized size	1	1.	2.45	161.9	0.	0.	0.	0.
time (sec)	N/A	0.231	0.223	1.559	0.	0.	0.	0.

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	248	248	531	21740	0	0	0	0
normalized size	1	1.	2.14	87.66	0.	0.	0.	0.
time (sec)	N/A	0.235	0.753	1.556	0.	0.	0.	0.

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	19	19	19	30	31	47	24	31
normalized size	1	1.	1.	1.58	1.63	2.47	1.26	1.63
time (sec)	N/A	0.006	0.004	0.056	1.16	1.93	0.303	1.211

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	37	37	36	55	36	88	42	59
normalized size	1	1.	0.97	1.49	0.97	2.38	1.14	1.59
time (sec)	N/A	0.014	0.004	0.059	1.241	1.76	0.366	1.32

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	55	55	51	80	50	127	63	84
normalized size	1	1.	0.93	1.45	0.91	2.31	1.15	1.53
time (sec)	N/A	0.018	0.006	0.057	1.255	1.927	0.427	1.195

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	25	25	25	75	46	80	36	46
normalized size	1	1.	1.	3.	1.84	3.2	1.44	1.84
time (sec)	N/A	0.015	0.007	0.057	1.245	2.009	0.358	1.198

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	49	49	48	131	51	136	63	88
normalized size	1	1.	0.98	2.67	1.04	2.78	1.29	1.8
time (sec)	N/A	0.025	0.006	0.057	1.182	1.919	0.501	1.217

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	73	73	67	187	69	192	95	123
normalized size	1	1.	0.92	2.56	0.95	2.63	1.3	1.68
time (sec)	N/A	0.032	0.008	0.059	1.239	2.044	0.623	1.241

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	24	24	24	30	47	73	37	54
normalized size	1	1.	1.	1.25	1.96	3.04	1.54	2.25
time (sec)	N/A	0.009	0.007	0.059	1.146	2.012	0.442	1.241

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	24	24	24	35	138	55	0	0
normalized size	1	1.	1.	1.46	5.75	2.29	0.	0.
time (sec)	N/A	0.026	0.007	0.061	1.22	2.07	0.	0.

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	15	15	15	19	0	39	17	0
normalized size	1	1.	1.	1.27	0.	2.6	1.13	0.
time (sec)	N/A	0.019	0.003	0.06	0.	1.933	5.344	0.

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	16	16	16	33	27	0	68	0
normalized size	1	1.	1.	2.06	1.69	0.	4.25	0.
time (sec)	N/A	0.015	0.002	0.058	1.247	0.	2.98	0.

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	16	16	16	33	27	0	68	0
normalized size	1	1.	1.	2.06	1.69	0.	4.25	0.
time (sec)	N/A	0.015	0.002	0.057	1.205	0.	3.028	0.

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	8	8	8	9	26	19	10	0
normalized size	1	1.	1.	1.12	3.25	2.38	1.25	0.
time (sec)	N/A	0.007	0.001	0.059	1.26	1.961	2.522	0.

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	10	10	10	9	11	22	7	12
normalized size	1	1.	1.	0.9	1.1	2.2	0.7	1.2
time (sec)	N/A	0.006	0.001	0.058	1.195	1.811	0.087	1.211

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	26	0	48	0
normalized size	1	1.	1.	0.85	1.3	0.	2.4	0.
time (sec)	N/A	0.019	0.002	0.059	1.238	0.	3.724	0.

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	25	25	27	19	27	0	88	0
normalized size	1	1.	1.08	0.76	1.08	0.	3.52	0.
time (sec)	N/A	0.02	0.002	0.057	1.239	0.	3.998	0.

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	21	21	22	46	36	0	75	0
normalized size	1	1.	1.05	2.19	1.71	0.	3.57	0.
time (sec)	N/A	0.021	0.002	0.06	1.52	0.	3.912	0.

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	21	21	22	46	36	0	75	0
normalized size	1	1.	1.05	2.19	1.71	0.	3.57	0.
time (sec)	N/A	0.021	0.002	0.066	1.78	0.	3.935	0.

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	14	14	14	17	35	36	15	0
normalized size	1	1.	1.	1.21	2.5	2.57	1.07	0.
time (sec)	N/A	0.018	0.002	0.061	1.383	2.065	3.453	0.

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	17	17	16	17	20	42	14	24
normalized size	1	1.	0.94	1.	1.18	2.47	0.82	1.41
time (sec)	N/A	0.011	0.001	0.059	1.186	1.923	0.275	1.206

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	26	26	27	26	35	0	54	0
normalized size	1	1.	1.04	1.	1.35	0.	2.08	0.
time (sec)	N/A	0.022	0.002	0.065	1.74	0.	4.649	0.

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	31	31	34	28	36	0	95	0
normalized size	1	1.	1.1	0.9	1.16	0.	3.06	0.
time (sec)	N/A	0.023	0.002	0.06	1.51	0.	4.95	0.

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	187	156	163	1300	177	397	260	462
normalized size	1	0.83	0.87	6.95	0.95	2.12	1.39	2.47
time (sec)	N/A	0.192	0.048	0.534	1.226	2.011	3.736	1.19

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	177	193	186	1102	203	0	0	0
normalized size	1	1.09	1.05	6.23	1.15	0.	0.	0.
time (sec)	N/A	0.306	0.057	0.546	1.223	0.	0.	0.

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	285	285	260	5345	290	756	517	845
normalized size	1	1.	0.91	18.75	1.02	2.65	1.81	2.96
time (sec)	N/A	0.224	0.072	0.744	1.483	2.086	7.313	1.227

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	299	299	266	0	0	726	0	786
normalized size	1	1.	0.89	0.	0.	2.43	0.	2.63
time (sec)	N/A	0.452	0.94	0.63	0.	1.994	0.	1.34

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	197	0	0	473	0	455
normalized size	1	1.	0.9	0.	0.	2.16	0.	2.08
time (sec)	N/A	0.293	0.401	0.612	0.	2.087	0.	1.398

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	126	0	0	267	0	215
normalized size	1	1.	0.91	0.	0.	1.92	0.	1.55
time (sec)	N/A	0.162	0.162	0.407	0.	2.025	0.	1.306

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	C	F	A	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	63	63	0	312	0	113	0	66
normalized size	1	1.	0.	4.95	0.	1.79	0.	1.05
time (sec)	N/A	0.046	0.013	0.082	0.	1.924	0.	1.273

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	0.197	0.885	0.	0.	0.	0.

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.035	0.591	0.915	0.	0.	0.	0.

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	339	339	1674	0	0	1562	0	4691
normalized size	1	1.	4.94	0.	0.	4.61	0.	13.84
time (sec)	N/A	0.788	1.016	3.807	0.	2.191	0.	1.848

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	259	259	1015	0	0	1025	0	2755
normalized size	1	1.	3.92	0.	0.	3.96	0.	10.64
time (sec)	N/A	0.517	0.561	3.691	0.	2.097	0.	1.433

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	177	177	208	0	0	590	0	1328
normalized size	1	1.	1.18	0.	0.	3.33	0.	7.5
time (sec)	N/A	0.248	0.287	3.636	0.	2.13	0.	1.34

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	96	96	123	457	0	292	0	414
normalized size	1	1.	1.28	4.76	0.	3.04	0.	4.31
time (sec)	N/A	0.063	0.049	0.081	0.	2.17	0.	1.288

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.034	0.569	1.888	0.	0.	0.	0.

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.033	4.548	3.427	0.	0.	0.	0.

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	351	351	351	0	0	2404	0	11335
normalized size	1	1.	1.	0.	0.	6.85	0.	32.29
time (sec)	N/A	0.865	1.485	3.762	0.	2.369	0.	2.04

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	256	0	0	1353	0	5554
normalized size	1	1.	0.98	0.	0.	5.18	0.	21.28
time (sec)	N/A	0.36	0.417	3.707	0.	2.236	0.	1.578

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	118	735	0	632	0	1785
normalized size	1	1.	0.87	5.44	0.	4.68	0.	13.22
time (sec)	N/A	0.08	0.053	0.091	0.	2.153	0.	1.367

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.034	1.219	3.516	0.	0.	0.	0.

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.034	4.844	8.084	0.	0.	0.	0.

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	404	404	374	0	0	0	0	0
normalized size	1	1.	0.93	0.	0.	0.	0.	0.
time (sec)	N/A	0.701	0.514	0.796	0.	0.	0.	0.

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	255	255	235	0	0	0	0	0
normalized size	1	1.	0.92	0.	0.	0.	0.	0.
time (sec)	N/A	0.341	0.287	0.566	0.	0.	0.	0.

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	106	0	0	0	0	0
normalized size	1	1.	0.95	0.	0.	0.	0.	0.
time (sec)	N/A	0.087	0.049	0.06	0.	0.	0.	0.

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.047	1.159	0.891	0.	0.	0.	0.

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	87	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.102	0.319	0.889	0.	0.	0.	0.

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.216	0.36	0.892	0.	0.	0.	0.

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	526	526	446	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.812	1.085	0.73	0.	0.	0.	0.

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	330	330	282	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.426	0.434	0.511	0.	0.	0.	0.

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	143	143	127	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.109	0.134	0.058	0.	0.	0.	0.

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.056	2.048	0.97	0.	0.	0.	0.

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	87	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.106	0.884	0.88	0.	0.	0.	0.

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.207	0.832	0.915	0.	0.	0.	0.

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	660	660	511	0	0	0	0	0
normalized size	1	1.	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.984	1.717	0.722	0.	0.	0.	0.

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	413	413	326	0	0	0	0	0
normalized size	1	1.	0.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.508	0.693	0.487	0.	0.	0.	0.

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	179	179	152	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.13	0.166	0.06	0.	0.	0.	0.

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.057	2.019	0.949	0.	0.	0.	0.

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	87	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.114	6.822	0.846	0.	0.	0.	0.

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.235	6.119	0.878	0.	0.	0.	0.

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	383	383	331	0	0	0	0	0
normalized size	1	1.	0.86	0.	0.	0.	0.	0.
time (sec)	N/A	0.728	0.417	0.741	0.	0.	0.	0.

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	283	283	252	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.516	0.242	0.704	0.	0.	0.	0.

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	181	181	164	0	0	0	0	0
normalized size	1	1.	0.91	0.	0.	0.	0.	0.
time (sec)	N/A	0.273	0.14	0.472	0.	0.	0.	0.

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	80	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.07	0.016	0.061	0.	0.	0.	0.

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.052	0.08	0.93	0.	0.	0.	0.

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	422	422	1281	0	0	0	0	0
normalized size	1	1.	3.04	0.	0.	0.	0.	0.
time (sec)	N/A	1.315	2.748	0.727	0.	0.	0.	0.

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	325	325	828	0	0	0	0	0
normalized size	1	1.	2.55	0.	0.	0.	0.	0.
time (sec)	N/A	0.869	1.378	0.679	0.	0.	0.	0.

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	220	220	338	0	0	0	0	0
normalized size	1	1.	1.54	0.	0.	0.	0.	0.
time (sec)	N/A	0.403	0.807	0.466	0.	0.	0.	0.

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	116	116	139	0	0	0	0	0
normalized size	1	1.	1.2	0.	0.	0.	0.	0.
time (sec)	N/A	0.095	0.084	0.059	0.	0.	0.	0.

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.061	0.248	0.936	0.	0.	0.	0.

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	520	520	2647	0	0	0	0	0
normalized size	1	1.	5.09	0.	0.	0.	0.	0.
time (sec)	N/A	2.333	7.007	0.781	0.	0.	0.	0.

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	421	421	527	0	0	0	0	0
normalized size	1	1.	1.25	0.	0.	0.	0.	0.
time (sec)	N/A	1.399	4.527	0.681	0.	0.	0.	0.

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	311	311	353	0	0	0	0	0
normalized size	1	1.	1.14	0.	0.	0.	0.	0.
time (sec)	N/A	0.564	1.907	0.474	0.	0.	0.	0.

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	163	0	0	0	0	0
normalized size	1	1.	1.04	0.	0.	0.	0.	0.
time (sec)	N/A	0.117	0.169	0.06	0.	0.	0.	0.

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.059	0.552	0.97	0.	0.	0.	0.

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	163	163	137	0	0	1207	0	0
normalized size	1	1.	0.84	0.	0.	7.4	0.	0.
time (sec)	N/A	0.163	0.222	1.185	0.	1.982	0.	0.

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	132	132	118	0	0	728	139	0
normalized size	1	1.	0.89	0.	0.	5.52	1.05	0.
time (sec)	N/A	0.085	0.127	1.127	0.	1.873	4.524	0.

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	97	97	83	148	0	432	326	149
normalized size	1	1.	0.86	1.53	0.	4.45	3.36	1.54
time (sec)	N/A	0.059	0.08	0.331	0.	1.926	24.596	1.261

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	80	0	0	512	85	124
normalized size	1	1.	0.99	0.	0.	6.32	1.05	1.53
time (sec)	N/A	0.053	0.164	0.926	0.	1.89	16.924	1.319

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	114	114	85	0	0	929	0	258
normalized size	1	1.	0.75	0.	0.	8.15	0.	2.26
time (sec)	N/A	0.082	0.036	0.916	0.	1.996	0.	1.276

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	145	145	78	0	0	1678	0	0
normalized size	1	1.	0.54	0.	0.	11.57	0.	0.
time (sec)	N/A	0.111	0.046	0.921	0.	2.109	0.	0.

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	176	176	78	0	0	2611	0	0
normalized size	1	1.	0.44	0.	0.	14.84	0.	0.
time (sec)	N/A	0.144	0.05	0.9	0.	2.439	0.	0.

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	590	590	854	0	0	0	0	0
normalized size	1	1.	1.45	0.	0.	0.	0.	0.
time (sec)	N/A	2.169	1.85	1.01	0.	0.	0.	0.

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	510	510	643	0	0	0	0	0
normalized size	1	1.	1.26	0.	0.	0.	0.	0.
time (sec)	N/A	1.501	1.093	1.007	0.	0.	0.	0.

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	418	418	566	0	0	0	0	0
normalized size	1	1.	1.35	0.	0.	0.	0.	0.
time (sec)	N/A	1.067	1.092	0.961	0.	0.	0.	0.

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	312	312	424	0	0	0	0	0
normalized size	1	1.	1.36	0.	0.	0.	0.	0.
time (sec)	N/A	0.766	0.624	0.905	0.	0.	0.	0.

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	423	423	557	0	0	0	0	0
normalized size	1	1.	1.32	0.	0.	0.	0.	0.
time (sec)	N/A	1.121	1.509	0.925	0.	0.	0.	0.

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	503	503	639	0	0	0	0	0
normalized size	1	1.	1.27	0.	0.	0.	0.	0.
time (sec)	N/A	1.512	2.24	0.913	0.	0.	0.	0.

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	583	583	728	0	0	0	0	0
normalized size	1	1.	1.25	0.	0.	0.	0.	0.
time (sec)	N/A	1.848	3.982	0.92	0.	0.	0.	0.

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.041	1.035	0.723	0.	0.	0.	0.

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.038	0.857	0.69	0.	0.	0.	0.

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.039	1.232	0.68	0.	0.	0.	0.

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.042	1.374	0.668	0.	0.	0.	0.

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.265	1.364	0.881	0.	0.	0.	0.

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.243	1.527	0.799	0.	0.	0.	0.

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	77	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.257	1.287	0.777	0.	0.	0.	0.

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.055	5.106	0.803	0.	0.	0.	0.

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.056	2.807	0.841	0.	0.	0.	0.

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.058	0.744	0.841	0.	0.	0.	0.

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	94	94	81	0	0	0	0	0
normalized size	1	1.	0.86	0.	0.	0.	0.	0.
time (sec)	N/A	0.05	0.085	1.049	0.	0.	0.	0.

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	0.319	1.148	0.	0.	0.	0.

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	2.642	6.036	0.	0.	0.	0.

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.053	5.751	0.88	0.	0.	0.	0.

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.043	0.064	0.812	0.	0.	0.	0.

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.046	3.071	0.799	0.	0.	0.	0.

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.054	2.506	0.854	0.	0.	0.	0.

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	F(-2)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.026	0.458	0.803	0.	0.	0.	0.

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	474	474	343	0	0	0	0	0
normalized size	1	1.	0.72	0.	0.	0.	0.	0.
time (sec)	N/A	0.549	1.741	0.938	0.	0.	0.	0.

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	348	348	262	0	0	0	0	0
normalized size	1	1.	0.75	0.	0.	0.	0.	0.
time (sec)	N/A	0.364	0.542	1.171	0.	0.	0.	0.

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	225	225	181	0	0	0	0	0
normalized size	1	1.	0.8	0.	0.	0.	0.	0.
time (sec)	N/A	0.205	0.207	0.957	0.	0.	0.	0.

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	103	0	0	143	0	0
normalized size	1	1.	1.	0.	0.	1.39	0.	0.
time (sec)	N/A	0.06	0.06	0.429	0.	1.806	0.	0.

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.029	0.252	1.052	0.	0.	0.	0.

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	315	260	589	1057	1022	1019	636	921
normalized size	1	0.83	1.87	3.36	3.24	3.23	2.02	2.92
time (sec)	N/A	0.506	0.548	0.064	1.257	1.763	2.792	1.204

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	244	204	375	685	728	652	400	597
normalized size	1	0.84	1.54	2.81	2.98	2.67	1.64	2.45
time (sec)	N/A	0.384	0.303	0.065	1.173	1.794	2.133	1.189

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	133	214	387	474	366	216	325
normalized size	1	0.85	1.36	2.46	3.02	2.33	1.38	2.07
time (sec)	N/A	0.263	0.146	0.062	1.226	1.698	1.419	1.211

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	79	79	66	163	271	163	82	147
normalized size	1	1.	0.84	2.06	3.43	2.06	1.04	1.86
time (sec)	N/A	0.129	0.052	0.06	1.118	1.62	0.89	1.172

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	27	39	136	77	31	46
normalized size	1	1.	1.	1.44	5.04	2.85	1.15	1.7
time (sec)	N/A	0.034	0.004	0.062	1.13	1.656	0.367	1.195

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	87	116	91	197	0	0	0	0
normalized size	1	1.33	1.05	2.26	0.	0.	0.	0.
time (sec)	N/A	0.234	0.065	0.489	0.	0.	0.	0.

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	151	181	141	355	0	0	0	0
normalized size	1	1.2	0.93	2.35	0.	0.	0.	0.
time (sec)	N/A	0.364	0.154	0.563	0.	0.	0.	0.

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	250	282	226	656	0	0	0	0
normalized size	1	1.13	0.9	2.62	0.	0.	0.	0.
time (sec)	N/A	0.572	0.228	0.476	0.	0.	0.	0.

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	579	672	374	2310	1926	2012	1394	2192
normalized size	1	1.16	0.65	3.99	3.33	3.47	2.41	3.79
time (sec)	N/A	1.674	0.565	0.066	1.366	1.925	5.918	1.208

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	464	459	267	1485	1301	1278	865	1405
normalized size	1	0.99	0.58	3.2	2.8	2.75	1.86	3.03
time (sec)	N/A	0.981	0.305	0.064	1.351	1.803	4.23	1.189

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	238	238	171	825	791	709	452	756
normalized size	1	1.	0.72	3.47	3.32	2.98	1.9	3.18
time (sec)	N/A	0.513	0.159	0.068	1.292	1.603	2.791	1.18

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	113	113	89	341	410	311	168	324
normalized size	1	1.	0.79	3.02	3.63	2.75	1.49	2.87
time (sec)	N/A	0.202	0.057	0.062	1.248	1.6	1.702	1.174

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	27	63	173	119	51	72
normalized size	1	1.	1.	2.33	6.41	4.41	1.89	2.67
time (sec)	N/A	0.06	0.004	0.06	1.161	1.715	0.486	1.207

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	168	189	383	447	0	0	0
normalized size	1	1.18	1.33	2.7	3.15	0.	0.	0.
time (sec)	N/A	0.383	0.193	0.363	1.265	0.	0.	0.

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	273	300	360	0	840	0	0	0
normalized size	1	1.1	1.32	0.	3.08	0.	0.	0.
time (sec)	N/A	0.637	0.518	2.26	1.43	0.	0.	0.

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	485	453	680	0	1716	0	0	0
normalized size	1	0.93	1.4	0.	3.54	0.	0.	0.
time (sec)	N/A	1.092	0.885	2.142	2.045	0.	0.	0.

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	230	230	397	0	0	851	0	0
normalized size	1	1.	1.73	0.	0.	3.7	0.	0.
time (sec)	N/A	0.668	0.853	0.761	0.	1.705	0.	0.

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	177	177	279	0	0	562	0	0
normalized size	1	1.	1.58	0.	0.	3.18	0.	0.
time (sec)	N/A	0.484	0.482	0.721	0.	1.66	0.	0.

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	124	124	137	0	0	332	0	0
normalized size	1	1.	1.1	0.	0.	2.68	0.	0.
time (sec)	N/A	0.379	0.285	0.738	0.	1.552	0.	0.

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	71	71	76	0	0	157	0	0
normalized size	1	1.	1.07	0.	0.	2.21	0.	0.
time (sec)	N/A	0.218	0.143	0.529	0.	1.684	0.	0.

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	23	23	23	25	39	50	17	113
normalized size	1	1.	1.	1.09	1.7	2.17	0.74	4.91
time (sec)	N/A	0.066	0.017	0.066	1.183	1.654	0.215	1.23

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	71	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.241	0.39	0.946	0.	0.	0.	0.

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	113	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.295	4.011	0.918	0.	0.	0.	0.

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	485	485	818	0	0	0	0	0
normalized size	1	1.	1.69	0.	0.	0.	0.	0.
time (sec)	N/A	2.045	1.095	1.205	0.	0.	0.	0.

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	417	417	607	0	0	0	0	0
normalized size	1	1.	1.46	0.	0.	0.	0.	0.
time (sec)	N/A	1.378	0.973	1.135	0.	0.	0.	0.

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	349	349	534	0	0	0	0	0
normalized size	1	1.	1.53	0.	0.	0.	0.	0.
time (sec)	N/A	0.986	0.501	1.235	0.	0.	0.	0.

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	256	256	457	0	0	0	0	0
normalized size	1	1.	1.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.694	0.22	1.168	0.	0.	0.	0.

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	340	340	526	0	0	0	0	0
normalized size	1	1.	1.55	0.	0.	0.	0.	0.
time (sec)	N/A	1.026	0.52	1.152	0.	0.	0.	0.

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	406	406	608	0	0	0	0	0
normalized size	1	1.	1.5	0.	0.	0.	0.	0.
time (sec)	N/A	1.388	0.781	1.162	0.	0.	0.	0.

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	381	381	663	0	0	0	0	0
normalized size	1	1.	1.74	0.	0.	0.	0.	0.
time (sec)	N/A	1.53	1.029	180.	0.	0.	0.	0.

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	323	323	534	0	0	0	0	0
normalized size	1	1.	1.65	0.	0.	0.	0.	0.
time (sec)	N/A	0.913	0.357	0.835	0.	0.	0.	0.

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	242	242	239	0	0	0	0	0
normalized size	1	1.	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.645	2.693	0.842	0.	0.	0.	0.

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	316	316	550	0	0	0	0	0
normalized size	1	1.	1.74	0.	0.	0.	0.	0.
time (sec)	N/A	0.945	0.431	0.86	0.	0.	0.	0.

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	372	372	568	0	0	0	0	0
normalized size	1	1.	1.53	0.	0.	0.	0.	0.
time (sec)	N/A	1.257	0.866	0.865	0.	0.	0.	0.

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	F(-2)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.111	0.603	1.629	0.	0.	0.	0.

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	305	305	247	0	0	0	0	0
normalized size	1	1.	0.81	0.	0.	0.	0.	0.
time (sec)	N/A	0.664	1.304	0.678	0.	0.	0.	0.

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	210	210	189	0	0	0	0	0
normalized size	1	1.	0.9	0.	0.	0.	0.	0.
time (sec)	N/A	0.472	0.507	0.836	0.	0.	0.	0.

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	106	0	0	270	0	0
normalized size	1	1.	0.92	0.	0.	2.35	0.	0.
time (sec)	N/A	0.282	0.223	0.487	0.	1.824	0.	0.

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	31	31	31	32	0	96	0	43
normalized size	1	1.	1.	1.03	0.	3.1	0.	1.39
time (sec)	N/A	0.075	0.012	0.064	0.	1.802	0.	1.245

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.13	0.611	0.974	0.	0.	0.	0.

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.127	0.535	0.831	0.	0.	0.	0.

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.129	0.7	0.862	0.	0.	0.	0.

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	402	402	379	2801	0	0	0	0
normalized size	1	1.	0.94	6.97	0.	0.	0.	0.
time (sec)	N/A	0.364	0.58	0.602	0.	0.	0.	0.

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	241	241	224	1605	0	0	0	0
normalized size	1	1.	0.93	6.66	0.	0.	0.	0.
time (sec)	N/A	0.223	0.262	0.536	0.	0.	0.	0.

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	110	750	0	0	0	0
normalized size	1	1.	0.92	6.3	0.	0.	0.	0.
time (sec)	N/A	0.139	0.109	0.599	0.	0.	0.	0.

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0
normalized size	1	1.	0.98	4.14	0.	0.	0.	0.
time (sec)	N/A	0.045	0.007	0.115	0.	0.	0.	0.

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	111	647	0	0	0	0
normalized size	1	1.	0.72	4.17	0.	0.	0.	0.
time (sec)	N/A	0.195	0.062	0.74	0.	0.	0.	0.

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	252	252	196	970	0	0	0	0
normalized size	1	1.	0.78	3.85	0.	0.	0.	0.
time (sec)	N/A	0.259	0.25	0.735	0.	0.	0.	0.

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	402	402	311	1468	0	0	0	0
normalized size	1	1.	0.77	3.65	0.	0.	0.	0.
time (sec)	N/A	0.371	0.42	0.695	0.	0.	0.	0.

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	469	469	876	0	0	0	0	0
normalized size	1	1.	1.87	0.	0.	0.	0.	0.
time (sec)	N/A	0.555	0.552	1.678	0.	0.	0.	0.

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	215	215	460	0	0	0	0	0
normalized size	1	1.	2.14	0.	0.	0.	0.	0.
time (sec)	N/A	0.274	0.308	1.785	0.	0.	0.	0.

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	226	2018	0	0	0	0
normalized size	1	1.	2.04	18.18	0.	0.	0.	0.
time (sec)	N/A	0.114	0.236	0.075	0.	0.	0.	0.

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	264	264	353	4712	0	0	0	0
normalized size	1	1.	1.34	17.85	0.	0.	0.	0.
time (sec)	N/A	0.371	0.287	0.912	0.	0.	0.	0.

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	427	427	630	0	0	0	0	0
normalized size	1	1.	1.48	0.	0.	0.	0.	0.
time (sec)	N/A	0.491	0.793	1.826	0.	0.	0.	0.

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	660	660	1521	0	0	0	0	0
normalized size	1	1.	2.3	0.	0.	0.	0.	0.
time (sec)	N/A	0.734	0.862	2.272	0.	0.	0.	0.

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	308	308	799	0	0	0	0	0
normalized size	1	1.	2.59	0.	0.	0.	0.	0.
time (sec)	N/A	0.364	0.378	2.141	0.	0.	0.	0.

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	158	158	335	9538	0	0	0	0
normalized size	1	1.	2.12	60.37	0.	0.	0.	0.
time (sec)	N/A	0.18	0.174	0.194	0.	0.	0.	0.

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	372	372	599	21696	0	0	0	0
normalized size	1	1.	1.61	58.32	0.	0.	0.	0.
time (sec)	N/A	0.522	0.43	2.11	0.	0.	0.	0.

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	602	602	1025	0	0	0	0	0
normalized size	1	1.	1.7	0.	0.	0.	0.	0.
time (sec)	N/A	0.725	1.438	1.974	0.	0.	0.	0.

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	106	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.176	0.23	0.872	0.	0.	0.	0.

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	0.023	0.059	0.	0.	0.	0.

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.189	0.844	1.563	0.	0.	0.	0.

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	120	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.234	3.069	1.711	0.	0.	0.	0.

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	142	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.196	1.194	2.901	0.	0.	0.	0.

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.034	0.077	0.06	0.	0.	0.	0.

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.183	12.675	15.503	0.	0.	0.	0.

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	120	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.224	26.641	21.281	0.	0.	0.	0.

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	281	281	241	1000	0	0	0	0
normalized size	1	1.	0.86	3.56	0.	0.	0.	0.
time (sec)	N/A	0.278	0.271	0.569	0.	0.	0.	0.

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	181	181	170	724	0	0	0	0
normalized size	1	1.	0.94	4.	0.	0.	0.	0.
time (sec)	N/A	0.193	0.137	0.561	0.	0.	0.	0.

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	95	463	0	0	0	0
normalized size	1	1.	0.91	4.45	0.	0.	0.	0.
time (sec)	N/A	0.131	0.072	0.588	0.	0.	0.	0.

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0
normalized size	1	1.	0.98	4.14	0.	0.	0.	0.
time (sec)	N/A	0.048	0.007	0.11	0.	0.	0.	0.

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	107	107	85	455	0	0	0	0
normalized size	1	1.	0.79	4.25	0.	0.	0.	0.
time (sec)	N/A	0.144	0.037	0.515	0.	0.	0.	0.

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	162	162	141	669	0	0	0	0
normalized size	1	1.	0.87	4.13	0.	0.	0.	0.
time (sec)	N/A	0.191	0.084	0.547	0.	0.	0.	0.

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	250	250	208	926	0	0	0	0
normalized size	1	1.	0.83	3.7	0.	0.	0.	0.
time (sec)	N/A	0.252	0.218	0.533	0.	0.	0.	0.

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	265	265	220	1063	0	0	0	0
normalized size	1	1.	0.83	4.01	0.	0.	0.	0.
time (sec)	N/A	0.26	0.325	0.565	0.	0.	0.	0.

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	186	153	791	0	0	0	0
normalized size	1	1.	0.82	4.25	0.	0.	0.	0.
time (sec)	N/A	0.203	0.153	0.566	0.	0.	0.	0.

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	114	519	0	0	0	0
normalized size	1	1.	0.83	3.76	0.	0.	0.	0.
time (sec)	N/A	0.152	0.109	0.504	0.	0.	0.	0.

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	115	215	0	150
normalized size	1	1.	0.77	4.78	1.55	2.91	0.	2.03
time (sec)	N/A	0.028	0.066	0.077	1.153	1.787	0.	1.285

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	179	179	152	694	0	0	0	0
normalized size	1	1.	0.85	3.88	0.	0.	0.	0.
time (sec)	N/A	0.202	0.139	0.543	0.	0.	0.	0.

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	240	240	199	936	0	0	0	0
normalized size	1	1.	0.83	3.9	0.	0.	0.	0.
time (sec)	N/A	0.244	0.208	0.519	0.	0.	0.	0.

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	335	335	269	1224	0	0	0	0
normalized size	1	1.	0.8	3.65	0.	0.	0.	0.
time (sec)	N/A	0.314	0.4	0.536	0.	0.	0.	0.

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	397	397	331	905	0	0	0	0
normalized size	1	1.	0.83	2.28	0.	0.	0.	0.
time (sec)	N/A	0.51	0.287	0.518	0.	0.	0.	0.

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	243	631	0	0	0	0
normalized size	1	1.	0.87	2.27	0.	0.	0.	0.
time (sec)	N/A	0.325	0.172	0.456	0.	0.	0.	0.

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	203	203	172	411	0	0	0	0
normalized size	1	1.	0.85	2.02	0.	0.	0.	0.
time (sec)	N/A	0.18	0.037	0.395	0.	0.	0.	0.

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	245	245	224	604	0	0	0	0
normalized size	1	1.	0.91	2.47	0.	0.	0.	0.
time (sec)	N/A	0.316	0.087	0.402	0.	0.	0.	0.

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	331	331	279	841	0	0	0	0
normalized size	1	1.	0.84	2.54	0.	0.	0.	0.
time (sec)	N/A	0.368	0.179	0.417	0.	0.	0.	0.

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	369	369	339	982	0	0	0	0
normalized size	1	1.	0.92	2.66	0.	0.	0.	0.
time (sec)	N/A	0.395	0.339	0.5	0.	0.	0.	0.

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	276	276	263	710	0	0	0	0
normalized size	1	1.	0.95	2.57	0.	0.	0.	0.
time (sec)	N/A	0.309	0.136	0.454	0.	0.	0.	0.

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	239	239	184	474	0	0	0	0
normalized size	1	1.	0.77	1.98	0.	0.	0.	0.
time (sec)	N/A	0.168	0.047	0.529	0.	0.	0.	0.

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	290	290	280	722	0	0	0	0
normalized size	1	1.	0.97	2.49	0.	0.	0.	0.
time (sec)	N/A	0.316	0.17	0.514	0.	0.	0.	0.

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	388	388	350	983	0	0	0	0
normalized size	1	1.	0.9	2.53	0.	0.	0.	0.
time (sec)	N/A	0.376	0.349	0.602	0.	0.	0.	0.

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	417	417	530	1008	0	0	0	0
normalized size	1	1.	1.27	2.42	0.	0.	0.	0.
time (sec)	N/A	0.487	1.189	0.462	0.	0.	0.	0.

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	344	344	455	726	0	0	0	0
normalized size	1	1.	1.32	2.11	0.	0.	0.	0.
time (sec)	N/A	0.407	0.882	0.408	0.	0.	0.	0.

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	165	765	0	817	0	294
normalized size	1	1.	1.19	5.5	0.	5.88	0.	2.12
time (sec)	N/A	0.078	0.16	0.529	0.	1.95	0.	1.38

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	383	383	521	910	0	0	0	0
normalized size	1	1.	1.36	2.38	0.	0.	0.	0.
time (sec)	N/A	0.453	1.145	0.423	0.	0.	0.	0.

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	460	460	596	1165	0	0	0	0
normalized size	1	1.	1.3	2.53	0.	0.	0.	0.
time (sec)	N/A	0.517	1.329	0.431	0.	0.	0.	0.

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	534	534	434	2021	0	0	0	0
normalized size	1	1.	0.81	3.78	0.	0.	0.	0.
time (sec)	N/A	0.93	0.956	0.549	0.	0.	0.	0.

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	491	491	383	1781	0	0	0	0
normalized size	1	1.	0.78	3.63	0.	0.	0.	0.
time (sec)	N/A	0.76	0.882	0.619	0.	0.	0.	0.

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	503	503	407	1666	0	0	0	0
normalized size	1	1.	0.81	3.31	0.	0.	0.	0.
time (sec)	N/A	0.394	1.4	0.61	0.	0.	0.	0.

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	560	560	476	2032	0	0	0	0
normalized size	1	1.	0.85	3.63	0.	0.	0.	0.
time (sec)	N/A	0.819	0.954	0.654	0.	0.	0.	0.

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	326	326	275	0	0	0	0	0
normalized size	1	1.	0.84	0.	0.	0.	0.	0.
time (sec)	N/A	0.421	0.232	0.852	0.	0.	0.	0.

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	506	506	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.557	3.605	0.822	0.	0.	0.	0.

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	307	0	0	0	0	0
normalized size	1	1.	1.1	0.	0.	0.	0.	0.
time (sec)	N/A	0.474	0.028	1.102	0.	0.	0.	0.

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	510	510	1077	0	0	0	0	0
normalized size	1	1.	2.11	0.	0.	0.	0.	0.
time (sec)	N/A	0.644	4.327	1.158	0.	0.	0.	0.

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	162	50	0	0
normalized size	1	1.	1.12	0.83	6.75	2.08	0.	0.
time (sec)	N/A	0.031	0.006	0.06	1.196	1.601	0.	0.

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	42	42	81	84	161	0	0	0
normalized size	1	1.	1.93	2.	3.83	0.	0.	0.
time (sec)	N/A	0.054	0.016	0.062	1.095	0.	0.	0.

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	41	41	82	44	0	101	0	0
normalized size	1	1.	2.	1.07	0.	2.46	0.	0.
time (sec)	N/A	0.061	0.032	0.063	0.	1.752	0.	0.

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	80	109	0	0	0	0
normalized size	1	1.	1.7	2.32	0.	0.	0.	0.
time (sec)	N/A	0.065	0.025	0.063	0.	0.	0.	0.

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	371	371	345	153	0	0	0	0
normalized size	1	1.	0.93	0.41	0.	0.	0.	0.
time (sec)	N/A	0.596	0.328	0.39	0.	0.	0.	0.

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	292	292	297	77	0	0	0	0
normalized size	1	1.	1.02	0.26	0.	0.	0.	0.
time (sec)	N/A	0.277	0.053	0.383	0.	0.	0.	0.

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	324	324	330	108	0	0	0	0
normalized size	1	1.	1.02	0.33	0.	0.	0.	0.
time (sec)	N/A	0.429	0.089	0.378	0.	0.	0.	0.

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	414	414	405	185	0	0	0	0
normalized size	1	1.	0.98	0.45	0.	0.	0.	0.
time (sec)	N/A	0.496	0.139	0.417	0.	0.	0.	0.

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	416	416	403	148	0	0	0	0
normalized size	1	1.	0.97	0.36	0.	0.	0.	0.
time (sec)	N/A	0.701	0.323	0.373	0.	0.	0.	0.

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	383	383	369	136	0	0	0	0
normalized size	1	1.	0.96	0.36	0.	0.	0.	0.
time (sec)	N/A	0.446	0.132	0.384	0.	0.	0.	0.

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	359	359	297	86	0	0	0	0
normalized size	1	1.	0.83	0.24	0.	0.	0.	0.
time (sec)	N/A	0.315	0.087	0.38	0.	0.	0.	0.

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	359	359	294	94	0	0	0	0
normalized size	1	1.	0.82	0.26	0.	0.	0.	0.
time (sec)	N/A	0.239	0.07	0.377	0.	0.	0.	0.

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	398	398	378	128	0	0	0	0
normalized size	1	1.	0.95	0.32	0.	0.	0.	0.
time (sec)	N/A	0.494	0.137	0.41	0.	0.	0.	0.

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	423	423	371	153	0	0	0	0
normalized size	1	1.	0.88	0.36	0.	0.	0.	0.
time (sec)	N/A	0.438	0.222	0.433	0.	0.	0.	0.

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	498	498	446	175	0	0	0	0
normalized size	1	1.	0.9	0.35	0.	0.	0.	0.
time (sec)	N/A	0.81	0.321	0.385	0.	0.	0.	0.

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	401	401	383	85	0	0	0	0
normalized size	1	1.	0.96	0.21	0.	0.	0.	0.
time (sec)	N/A	0.46	0.061	0.378	0.	0.	0.	0.

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	433	433	416	116	0	0	0	0
normalized size	1	1.	0.96	0.27	0.	0.	0.	0.
time (sec)	N/A	0.595	0.102	0.394	0.	0.	0.	0.

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	530	530	484	164	0	0	0	0
normalized size	1	1.	0.91	0.31	0.	0.	0.	0.
time (sec)	N/A	0.648	0.222	0.376	0.	0.	0.	0.

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	473	473	348	102	0	0	0	0
normalized size	1	1.	0.74	0.22	0.	0.	0.	0.
time (sec)	N/A	0.473	0.11	0.371	0.	0.	0.	0.

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	537	537	506	161	0	0	0	0
normalized size	1	1.	0.94	0.3	0.	0.	0.	0.
time (sec)	N/A	0.651	0.196	0.422	0.	0.	0.	0.

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	521	521	458	154	0	0	0	0
normalized size	1	1.	0.88	0.3	0.	0.	0.	0.
time (sec)	N/A	0.756	0.236	0.385	0.	0.	0.	0.

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	497	497	464	94	0	0	0	0
normalized size	1	1.	0.93	0.19	0.	0.	0.	0.
time (sec)	N/A	0.541	0.276	0.385	0.	0.	0.	0.

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	497	497	359	112	0	0	0	0
normalized size	1	1.	0.72	0.23	0.	0.	0.	0.
time (sec)	N/A	0.416	0.105	0.38	0.	0.	0.	0.

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	536	536	525	136	0	0	0	0
normalized size	1	1.	0.98	0.25	0.	0.	0.	0.
time (sec)	N/A	0.816	0.602	0.421	0.	0.	0.	0.

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	101	101	138	267	148	251
normalized size	1	1.	1.11	1.11	1.52	2.93	1.63	2.76
time (sec)	N/A	0.064	0.056	0.086	1.056	1.959	2.918	1.232

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	120	120	150	585	252	474	277	581
normalized size	1	1.	1.25	4.88	2.1	3.95	2.31	4.84
time (sec)	N/A	0.113	0.14	0.465	1.107	1.905	11.07	1.297

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	149	149	226	836	383	713	450	1053
normalized size	1	1.	1.52	5.61	2.57	4.79	3.02	7.07
time (sec)	N/A	0.123	0.208	0.481	1.148	1.96	42.562	1.334

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	62	261	0	0	0	0
normalized size	1	1.	0.98	4.14	0.	0.	0.	0.
time (sec)	N/A	0.1	0.013	0.584	0.	0.	0.	0.

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	74	74	57	354	116	215	0	150
normalized size	1	1.	0.77	4.78	1.57	2.91	0.	2.03
time (sec)	N/A	0.083	0.069	0.314	1.101	2.031	0.	1.305

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	83	633	228	579	0	408
normalized size	1	1.	0.74	5.65	2.04	5.17	0.	3.64
time (sec)	N/A	0.118	0.102	0.347	1.114	2.015	0.	1.179

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	247	247	247	248	0	0	0	0
normalized size	1	1.	1.	1.	0.	0.	0.	0.
time (sec)	N/A	0.337	0.179	0.07	0.	0.	0.	0.

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	831	752	862	0	0	0	0	0
normalized size	1	0.9	1.04	0.	0.	0.	0.	0.
time (sec)	N/A	1.085	1.02	1.493	0.	0.	0.	0.

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	499	499	637	0	0	0	0	0
normalized size	1	1.	1.28	0.	0.	0.	0.	0.
time (sec)	N/A	0.688	0.465	1.504	0.	0.	0.	0.

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	317	317	464	0	0	0	0	0
normalized size	1	1.	1.46	0.	0.	0.	0.	0.
time (sec)	N/A	0.371	0.261	1.071	0.	0.	0.	0.

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	397	397	576	0	0	0	0	0
normalized size	1	1.	1.45	0.	0.	0.	0.	0.
time (sec)	N/A	0.597	0.374	1.168	0.	0.	0.	0.

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	551	575	811	0	0	0	0	0
normalized size	1	1.04	1.47	0.	0.	0.	0.	0.
time (sec)	N/A	0.946	0.722	1.353	0.	0.	0.	0.

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	701	646	821	0	0	0	0	0
normalized size	1	0.92	1.17	0.	0.	0.	0.	0.
time (sec)	N/A	0.922	0.901	7.023	0.	0.	0.	0.

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	447	447	623	0	0	0	0	0
normalized size	1	1.	1.39	0.	0.	0.	0.	0.
time (sec)	N/A	0.592	0.62	12.529	0.	0.	0.	0.

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	371	371	485	0	0	0	0	0
normalized size	1	1.	1.31	0.	0.	0.	0.	0.
time (sec)	N/A	0.376	0.326	3.872	0.	0.	0.	0.

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	461	461	668	0	0	0	0	0
normalized size	1	1.	1.45	0.	0.	0.	0.	0.
time (sec)	N/A	0.634	0.494	20.142	0.	0.	0.	0.

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	694	717	930	0	0	0	0	0
normalized size	1	1.03	1.34	0.	0.	0.	0.	0.
time (sec)	N/A	1.114	0.791	9.815	0.	0.	0.	0.

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	936	936	1254	0	0	0	0	0
normalized size	1	1.	1.34	0.	0.	0.	0.	0.
time (sec)	N/A	1.53	2.765	1.707	0.	0.	0.	0.

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	739	739	1103	0	0	0	0	0
normalized size	1	1.	1.49	0.	0.	0.	0.	0.
time (sec)	N/A	1.195	2.3	1.322	0.	0.	0.	0.

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	430	430	590	2134	0	0	0	0
normalized size	1	1.	1.37	4.96	0.	0.	0.	0.
time (sec)	N/A	0.547	0.565	0.64	0.	0.	0.	0.

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	814	814	1209	0	0	0	0	0
normalized size	1	1.	1.49	0.	0.	0.	0.	0.
time (sec)	N/A	1.3	2.032	1.363	0.	0.	0.	0.

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	970	994	1391	0	0	0	0	0
normalized size	1	1.02	1.43	0.	0.	0.	0.	0.
time (sec)	N/A	1.653	2.936	1.444	0.	0.	0.	0.

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	897	897	1237	0	0	0	0	0
normalized size	1	1.	1.38	0.	0.	0.	0.	0.
time (sec)	N/A	1.784	3.02	3.694	0.	0.	0.	0.

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	815	815	1132	0	0	0	0	0
normalized size	1	1.	1.39	0.	0.	0.	0.	0.
time (sec)	N/A	1.544	2.421	12.387	0.	0.	0.	0.

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	821	821	1143	0	0	0	0	0
normalized size	1	1.	1.39	0.	0.	0.	0.	0.
time (sec)	N/A	0.846	2.623	11.023	0.	0.	0.	0.

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	919	919	1304	0	0	0	0	0
normalized size	1	1.	1.42	0.	0.	0.	0.	0.
time (sec)	N/A	1.613	3.194	5.175	0.	0.	0.	0.

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	477	477	754	0	0	0	0	0
normalized size	1	1.	1.58	0.	0.	0.	0.	0.
time (sec)	N/A	0.537	0.275	4.885	0.	0.	0.	0.

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	347	347	488	0	0	0	0	0
normalized size	1	1.	1.41	0.	0.	0.	0.	0.
time (sec)	N/A	0.316	0.153	4.311	0.	0.	0.	0.

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	178	419	0	0	0	0
normalized size	1	1.	0.78	1.83	0.	0.	0.	0.
time (sec)	N/A	0.164	0.091	0.405	0.	0.	0.	0.

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.115	0.396	0.838	0.	0.	0.	0.

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	29	24	0	63	0	0
normalized size	1	1.	1.07	0.89	0.	2.33	0.	0.
time (sec)	N/A	0.13	0.02	0.067	0.	1.562	0.	0.

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	29	24	0	63	0	0
normalized size	1	1.	1.07	0.89	0.	2.33	0.	0.
time (sec)	N/A	0.18	0.007	0.065	0.	1.576	0.	0.

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	28	28	31	28	0	72	0	0
normalized size	1	1.	1.11	1.	0.	2.57	0.	0.
time (sec)	N/A	0.135	0.023	0.065	0.	1.748	0.	0.

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	28	28	31	28	0	72	0	0
normalized size	1	1.	1.11	1.	0.	2.57	0.	0.
time (sec)	N/A	0.183	0.007	0.064	0.	1.664	0.	0.

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	162	50	0	0
normalized size	1	1.	1.12	0.83	6.75	2.08	0.	0.
time (sec)	N/A	0.031	0.006	0.063	1.037	1.68	0.	0.

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	24	24	27	20	162	50	0	0
normalized size	1	1.	1.12	0.83	6.75	2.08	0.	0.
time (sec)	N/A	0.133	0.004	0.062	1.101	1.617	0.	0.

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	37	37	252	24	332	76	0	0
normalized size	1	1.	6.81	0.65	8.97	2.05	0.	0.
time (sec)	N/A	0.025	0.187	0.064	1.265	1.61	0.	0.

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	332	76	0	0
normalized size	1	1.	9.33	0.89	12.3	2.81	0.	0.
time (sec)	N/A	0.074	0.148	0.06	1.192	1.666	0.	0.

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	328	76	0	0
normalized size	1	1.	9.33	0.89	12.15	2.81	0.	0.
time (sec)	N/A	0.02	0.136	0.064	1.136	1.612	0.	0.

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	252	24	328	76	0	0
normalized size	1	1.	9.33	0.89	12.15	2.81	0.	0.
time (sec)	N/A	0.127	0.149	0.066	1.123	1.556	0.	0.

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	238	238	494	12205	0	0	0	0
normalized size	1	1.	2.08	51.28	0.	0.	0.	0.
time (sec)	N/A	0.351	0.211	1.178	0.	0.	0.	0.

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	168	168	292	2679	0	0	0	0
normalized size	1	1.	1.74	15.95	0.	0.	0.	0.
time (sec)	N/A	0.248	0.134	0.793	0.	0.	0.	0.

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	97	97	98	420	166	0	0	0
normalized size	1	1.	1.01	4.33	1.71	0.	0.	0.
time (sec)	N/A	0.124	0.022	0.519	1.332	0.	0.	0.

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	51	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.11	0.625	0.825	0.	0.	0.	0.

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	500	500	993	0	0	0	0	0
normalized size	1	1.	1.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.701	0.719	12.324	0.	0.	0.	0.

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	372	372	655	0	0	0	0	0
normalized size	1	1.	1.76	0.	0.	0.	0.	0.
time (sec)	N/A	0.406	0.414	9.795	0.	0.	0.	0.

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	243	243	194	689	0	0	0	0
normalized size	1	1.	0.8	2.84	0.	0.	0.	0.
time (sec)	N/A	0.229	0.182	0.446	0.	0.	0.	0.

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	103	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.199	0.565	1.796	0.	0.	0.	0.

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	286	286	464	791	0	0	0	0
normalized size	1	1.	1.62	2.77	0.	0.	0.	0.
time (sec)	N/A	0.443	0.651	0.069	0.	0.	0.	0.

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	234	234	434	593	0	0	0	0
normalized size	1	1.	1.85	2.53	0.	0.	0.	0.
time (sec)	N/A	0.355	0.255	0.063	0.	0.	0.	0.

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	193	193	210	361	0	0	0	0
normalized size	1	1.	1.09	1.87	0.	0.	0.	0.
time (sec)	N/A	0.181	0.132	0.065	0.	0.	0.	0.

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	153	153	144	177	0	0	0	0
normalized size	1	1.	0.94	1.16	0.	0.	0.	0.
time (sec)	N/A	0.137	0.056	0.066	0.	0.	0.	0.

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	204	204	227	375	0	0	0	0
normalized size	1	1.	1.11	1.84	0.	0.	0.	0.
time (sec)	N/A	0.282	0.205	0.068	0.	0.	0.	0.

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	251	251	255	608	0	0	0	0
normalized size	1	1.	1.02	2.42	0.	0.	0.	0.
time (sec)	N/A	0.391	0.365	0.069	0.	0.	0.	0.

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	308	308	311	816	0	0	0	0
normalized size	1	1.	1.01	2.65	0.	0.	0.	0.
time (sec)	N/A	0.512	0.45	0.067	0.	0.	0.	0.

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	232	232	221	2330	312	0	0	0
normalized size	1	1.	0.95	10.04	1.34	0.	0.	0.
time (sec)	N/A	0.22	0.191	1.115	1.26	0.	0.	0.

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	195	195	197	2162	279	0	0	0
normalized size	1	1.	1.01	11.09	1.43	0.	0.	0.
time (sec)	N/A	0.183	0.188	1.02	1.207	0.	0.	0.

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	158	158	164	1994	240	0	0	0
normalized size	1	1.	1.04	12.62	1.52	0.	0.	0.
time (sec)	N/A	0.138	0.129	1.031	1.255	0.	0.	0.

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	116	1724	188	0	0	0
normalized size	1	1.	1.17	17.41	1.9	0.	0.	0.
time (sec)	N/A	0.094	0.078	0.938	1.224	0.	0.	0.

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	88	88	128	1749	0	0	0	0
normalized size	1	1.	1.45	19.88	0.	0.	0.	0.
time (sec)	N/A	0.074	0.068	0.6	0.	0.	0.	0.

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	120	111	1859	219	0	0	0
normalized size	1	1.18	1.09	18.23	2.15	0.	0.	0.
time (sec)	N/A	0.095	0.109	0.796	1.241	0.	0.	0.

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	175	204	2051	267	0	0	0
normalized size	1	1.12	1.31	13.15	1.71	0.	0.	0.
time (sec)	N/A	0.151	0.125	0.841	1.23	0.	0.	0.

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	193	212	240	2220	309	0	0	0
normalized size	1	1.1	1.24	11.5	1.6	0.	0.	0.
time (sec)	N/A	0.181	0.144	0.874	1.235	0.	0.	0.

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	230	249	273	2387	342	0	0	0
normalized size	1	1.08	1.19	10.38	1.49	0.	0.	0.
time (sec)	N/A	0.219	0.15	0.89	1.258	0.	0.	0.

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	705	902	735	0	0	0	0	0
normalized size	1	1.28	1.04	0.	0.	0.	0.	0.
time (sec)	N/A	2.189	1.606	1.685	0.	0.	0.	0.

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	602	602	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.293	0.383	2.195	0.	0.	0.	0.

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	309	309	549	0	0	0	0	0
normalized size	1	1.	1.78	0.	0.	0.	0.	0.
time (sec)	N/A	0.453	0.474	1.871	0.	0.	0.	0.

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	F	A	F	F	F	F(-1)	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD
size	823	0	823	0	0	0	0	0
normalized size	1	0.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.066	0.387	1.754	0.	0.	0.	0.

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	F	A	F	F	F	F(-1)	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD
size	607	0	513	0	0	0	0	0
normalized size	1	0.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.029	0.754	1.373	0.	0.	0.	0.

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	F	A	F	F	F	F(-1)	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD
size	939	0	781	0	0	0	0	0
normalized size	1	0.	0.83	0.	0.	0.	0.	0.
time (sec)	N/A	0.03	1.175	1.454	0.	0.	0.	0.

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	522	522	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.858	0.486	2.416	0.	0.	0.	0.

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	F	A	F	F	F	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD
size	519	0	519	0	0	0	0	0
normalized size	1	0.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.049	0.095	0.083	0.	0.	0.	0.

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.011	0.042	2.376	0.	0.	0.	0.

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.011	0.462	10.89	0.	0.	0.	0.

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.01	0.09	0.952	0.	0.	0.	0.

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	364	364	394	0	0	0	0	0
normalized size	1	1.	1.08	0.	0.	0.	0.	0.
time (sec)	N/A	0.055	0.094	0.075	0.	0.	0.	0.

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	258	258	342	1785	370	733	508	1021
normalized size	1	1.	1.33	6.92	1.43	2.84	1.97	3.96
time (sec)	N/A	0.435	0.084	0.603	1.131	1.965	5.479	1.293

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	196	206	263	1558	302	554	389	644
normalized size	1	1.05	1.34	7.95	1.54	2.83	1.98	3.29
time (sec)	N/A	0.371	0.048	0.603	1.057	2.16	3.044	1.365

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	130	76	156	223	365	257	289
normalized size	1	1.18	0.69	1.42	2.03	3.32	2.34	2.63
time (sec)	N/A	0.222	0.024	0.086	1.128	1.919	1.449	1.255

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	158	219	227	1534	0	0	0	0
normalized size	1	1.39	1.44	9.71	0.	0.	0.	0.
time (sec)	N/A	0.326	0.063	0.6	0.	0.	0.	0.

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	96	169	180	931	0	0	0	0
normalized size	1	1.76	1.88	9.7	0.	0.	0.	0.
time (sec)	N/A	0.346	0.028	0.577	0.	0.	0.	0.

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	265	254	1201	0	0	0	0
normalized size	1	1.7	1.63	7.7	0.	0.	0.	0.
time (sec)	N/A	0.557	0.129	0.593	0.	0.	0.	0.

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	234	365	351	1437	0	0	0	0
normalized size	1	1.56	1.5	6.14	0.	0.	0.	0.
time (sec)	N/A	0.822	0.176	0.539	0.	0.	0.	0.

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	742	742	605	4217	0	0	0	0
normalized size	1	1.	0.82	5.68	0.	0.	0.	0.
time (sec)	N/A	0.872	1.219	2.398	0.	0.	0.	0.

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	558	558	492	3680	0	0	0	0
normalized size	1	1.	0.88	6.59	0.	0.	0.	0.
time (sec)	N/A	0.609	0.922	1.842	0.	0.	0.	0.

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	397	397	341	3163	0	0	0	0
normalized size	1	1.	0.86	7.97	0.	0.	0.	0.
time (sec)	N/A	0.433	0.638	1.639	0.	0.	0.	0.

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	232	232	329	2544	0	0	0	0
normalized size	1	1.	1.42	10.97	0.	0.	0.	0.
time (sec)	N/A	0.285	0.226	1.346	0.	0.	0.	0.

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	637	637	605	0	0	0	0	0
normalized size	1	1.	0.95	0.	0.	0.	0.	0.
time (sec)	N/A	0.433	0.344	1.334	0.	0.	0.	0.

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	270	270	476	0	0	0	0	0
normalized size	1	1.	1.76	0.	0.	0.	0.	0.
time (sec)	N/A	0.333	0.23	1.977	0.	0.	0.	0.

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	421	421	765	0	0	0	0	0
normalized size	1	1.	1.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.455	0.418	1.299	0.	0.	0.	0.

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1210	1179	2067	0	0	0	0	0
normalized size	1	0.97	1.71	0.	0.	0.	0.	0.
time (sec)	N/A	2.79	0.943	4.207	0.	0.	0.	0.

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	649	649	1355	0	0	0	0	0
normalized size	1	1.	2.09	0.	0.	0.	0.	0.
time (sec)	N/A	1.481	0.533	2.82	0.	0.	0.	0.

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	0.692	1.535	0.	0.	0.	0.

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.04	0.865	1.424	0.	0.	0.	0.

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	2050	2050	4971	0	0	0	0	0
normalized size	1	1.	2.42	0.	0.	0.	0.	0.
time (sec)	N/A	6.891	3.387	2.901	0.	0.	0.	0.

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	1147	1147	3163	0	0	0	0	0
normalized size	1	1.	2.76	0.	0.	0.	0.	0.
time (sec)	N/A	3.123	1.053	4.523	0.	0.	0.	0.

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.04	1.27	1.802	0.	0.	0.	0.

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.041	1.769	2.023	0.	0.	0.	0.

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	66	66	62	0	0	0	0	0
normalized size	1	1.	0.94	0.	0.	0.	0.	0.
time (sec)	N/A	0.084	0.104	2.107	0.	0.	0.	0.

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	92	92	43	116	134	105	56	86
normalized size	1	1.	0.47	1.26	1.46	1.14	0.61	0.93
time (sec)	N/A	0.095	0.065	0.06	1.035	2.328	0.422	1.237

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	58	184	215	143	75	104
normalized size	1	1.	0.57	1.8	2.11	1.4	0.74	1.02
time (sec)	N/A	0.111	0.104	0.065	1.083	2.294	0.449	1.251

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	160	160	132	0	755	2973	2390	2433
normalized size	1	1.	0.82	0.	4.72	18.58	14.94	15.21
time (sec)	N/A	0.201	0.066	0.516	1.176	2.83	26.086	1.316

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	121	121	100	0	428	1374	1023	1110
normalized size	1	1.	0.83	0.	3.54	11.36	8.45	9.17
time (sec)	N/A	0.141	0.013	0.093	1.158	2.454	9.337	1.231

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	78	78	69	0	200	516	343	409
normalized size	1	1.	0.88	0.	2.56	6.62	4.4	5.24
time (sec)	N/A	0.094	0.01	0.095	1.103	2.29	3.272	1.228

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	34	34	34	42	61	124	58	86
normalized size	1	1.	1.	1.24	1.79	3.65	1.71	2.53
time (sec)	N/A	0.032	0.007	0.066	1.122	2.276	0.921	1.237

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	0	157	0	107
normalized size	1	1.	1.	0.	0.	1.89	0.	1.29
time (sec)	N/A	0.132	0.111	0.082	0.	2.215	0.	1.198

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	163	0	0	425	0	801
normalized size	1	1.	1.33	0.	0.	3.46	0.	6.51
time (sec)	N/A	0.168	0.11	0.087	0.	2.253	0.	1.243

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	189	0	0	1053	0	4699
normalized size	1	1.	1.12	0.	0.	6.23	0.	27.8
time (sec)	N/A	0.223	0.181	0.083	0.	2.275	0.	1.403

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	190	0	0	0	0	0
normalized size	1	1.	0.87	0.	0.	0.	0.	0.
time (sec)	N/A	0.368	0.311	0.6	0.	0.	0.	0.

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	176	176	160	0	0	0	0	0
normalized size	1	1.	0.91	0.	0.	0.	0.	0.
time (sec)	N/A	0.276	0.061	0.566	0.	0.	0.	0.

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	134	0	0	0	0	0
normalized size	1	1.	0.96	0.	0.	0.	0.	0.
time (sec)	N/A	0.22	0.062	0.081	0.	0.	0.	0.

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.182	0.021	0.089	0.	0.	0.	0.

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	147	147	181	0	0	0	0	0
normalized size	1	1.	1.23	0.	0.	0.	0.	0.
time (sec)	N/A	0.246	0.214	0.57	0.	0.	0.	0.

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	211	0	0	0	0	0
normalized size	1	1.	1.09	0.	0.	0.	0.	0.
time (sec)	N/A	0.312	0.315	0.549	0.	0.	0.	0.

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	272	0	0	0	0	0
normalized size	1	1.	1.15	0.	0.	0.	0.	0.
time (sec)	N/A	0.385	0.42	0.554	0.	0.	0.	0.

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	131	0	0	192	0	0
normalized size	1	1.	1.	0.	0.	1.47	0.	0.
time (sec)	N/A	0.147	0.163	0.145	0.	2.455	0.	0.

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	109	109	109	0	95	0	0	0
normalized size	1	1.	1.	0.	0.87	0.	0.	0.
time (sec)	N/A	0.139	0.109	0.426	1.319	0.	0.	0.

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	158	158	232	0	410	861	546	1413
normalized size	1	1.	1.47	0.	2.59	5.45	3.46	8.94
time (sec)	N/A	0.164	0.292	0.662	1.124	2.08	24.796	1.236

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	128	128	156	0	273	583	342	790
normalized size	1	1.	1.22	0.	2.13	4.55	2.67	6.17
time (sec)	N/A	0.125	0.179	0.497	1.205	1.911	9.847	1.193

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	98	98	113	0	151	339	187	350
normalized size	1	1.	1.15	0.	1.54	3.46	1.91	3.57
time (sec)	N/A	0.081	0.059	0.278	1.042	2.114	3.479	1.294

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	34	34	34	42	61	124	58	86
normalized size	1	1.	1.	1.24	1.79	3.65	1.71	2.53
time (sec)	N/A	0.029	0.008	0.066	1.061	2.234	0.928	1.298

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	68	68	67	0	0	0	0	0
normalized size	1	1.	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.112	0.013	0.729	0.	0.	0.	0.

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	69	0	122	262	1583	174
normalized size	1	1.	0.86	0.	1.52	3.28	19.79	2.17
time (sec)	N/A	0.076	0.103	0.665	1.055	2.317	12.169	1.3

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	88	0	232	667	0	485
normalized size	1	1.	0.74	0.	1.95	5.61	0.	4.08
time (sec)	N/A	0.129	0.147	0.664	1.06	2.237	0.	1.151

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	149	149	115	0	413	1169	0	868
normalized size	1	1.	0.77	0.	2.77	7.85	0.	5.83
time (sec)	N/A	0.167	0.195	0.661	1.208	2.11	0.	1.181

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	409	325	400	0	1208	3548	2623	5316
normalized size	1	0.79	0.98	0.	2.95	8.67	6.41	13.
time (sec)	N/A	1.038	0.269	0.499	1.315	2.749	116.264	1.513

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	323	264	277	0	817	2348	1692	3025
normalized size	1	0.82	0.86	0.	2.53	7.27	5.24	9.37
time (sec)	N/A	0.835	0.172	0.5	1.111	2.247	31.549	1.402

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	211	211	164	0	470	1320	879	1369
normalized size	1	1.	0.78	0.	2.23	6.26	4.17	6.49
time (sec)	N/A	0.389	0.088	0.285	1.169	2.189	11.304	1.293

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	78	78	69	0	200	516	343	409
normalized size	1	1.	0.88	0.	2.56	6.62	4.4	5.24
time (sec)	N/A	0.096	0.016	0.279	1.148	1.91	3.278	1.261

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	324	0	0	0	0	0
normalized size	1	1.	2.63	0.	0.	0.	0.	0.
time (sec)	N/A	0.265	0.164	0.697	0.	0.	0.	0.

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	200	0	0	0	0	0
normalized size	1	1.	1.39	0.	0.	0.	0.	0.
time (sec)	N/A	0.2	0.229	0.661	0.	0.	0.	0.

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	222	257	316	0	0	0	0	0
normalized size	1	1.16	1.42	0.	0.	0.	0.	0.
time (sec)	N/A	0.817	0.528	0.678	0.	0.	0.	0.

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	492	492	378	0	1681	6372	5008	7974
normalized size	1	1.	0.77	0.	3.42	12.95	10.18	16.21
time (sec)	N/A	0.948	0.275	0.507	1.411	3.127	124.17	1.676

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	306	306	231	0	988	3510	2756	3668
normalized size	1	1.	0.75	0.	3.23	11.47	9.01	11.99
time (sec)	N/A	0.534	0.123	0.279	1.205	2.368	31.655	1.455

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	121	121	100	0	428	1374	1023	1110
normalized size	1	1.	0.83	0.	3.54	11.36	8.45	9.17
time (sec)	N/A	0.141	0.025	0.274	1.123	2.072	9.306	1.318

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	177	177	646	0	0	0	0	0
normalized size	1	1.	3.65	0.	0.	0.	0.	0.
time (sec)	N/A	0.412	0.265	0.715	0.	0.	0.	0.

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	209	209	444	0	0	0	0	0
normalized size	1	1.	2.12	0.	0.	0.	0.	0.
time (sec)	N/A	0.366	0.586	0.674	0.	0.	0.	0.

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	376	408	660	0	0	0	0	0
normalized size	1	1.09	1.76	0.	0.	0.	0.	0.
time (sec)	N/A	1.39	1.039	0.681	0.	0.	0.	0.

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	160	160	132	0	755	2973	2390	2433
normalized size	1	1.	0.82	0.	4.72	18.58	14.94	15.21
time (sec)	N/A	0.201	0.058	0.282	1.242	2.273	26.454	1.347

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	231	231	1095	0	0	0	0	0
normalized size	1	1.	4.74	0.	0.	0.	0.	0.
time (sec)	N/A	0.534	0.426	0.719	0.	0.	0.	0.

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	274	274	1301	0	0	0	0	0
normalized size	1	1.	4.75	0.	0.	0.	0.	0.
time (sec)	N/A	0.525	0.577	0.686	0.	0.	0.	0.

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	29	29	29	36	54	101	53	78
normalized size	1	1.	1.	1.24	1.86	3.48	1.83	2.69
time (sec)	N/A	0.023	0.01	0.066	1.124	1.951	0.917	1.266

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	279	279	252	0	0	597	0	707
normalized size	1	1.	0.9	0.	0.	2.14	0.	2.53
time (sec)	N/A	0.779	0.815	0.5	0.	2.031	0.	1.396

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	179	179	164	0	0	351	0	340
normalized size	1	1.	0.92	0.	0.	1.96	0.	1.9
time (sec)	N/A	0.416	0.261	0.266	0.	1.964	0.	1.251

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	0	157	0	107
normalized size	1	1.	1.	0.	0.	1.89	0.	1.29
time (sec)	N/A	0.119	0.062	0.271	0.	1.942	0.	1.304

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.07	0.259	0.679	0.	0.	0.	0.

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.066	0.791	0.675	0.	0.	0.	0.

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	326	326	1310	0	0	1366	0	5462
normalized size	1	1.	4.02	0.	0.	4.19	0.	16.75
time (sec)	N/A	1.292	0.939	0.49	0.	2.028	0.	1.821

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	224	224	269	0	0	811	0	2657
normalized size	1	1.	1.2	0.	0.	3.62	0.	11.86
time (sec)	N/A	0.621	0.434	0.265	0.	2.043	0.	1.461

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	163	0	0	425	0	801
normalized size	1	1.	1.33	0.	0.	3.46	0.	6.51
time (sec)	N/A	0.161	0.115	0.266	0.	1.889	0.	1.333

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.065	1.326	0.657	0.	0.	0.	0.

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	18.273	0.665	0.	0.	0.	0.

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	432	432	438	0	0	3706	0	0
normalized size	1	1.	1.01	0.	0.	8.58	0.	0.
time (sec)	N/A	2.134	2.291	0.491	0.	2.421	0.	0.

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	322	322	322	0	0	2130	0	15570
normalized size	1	1.	1.	0.	0.	6.61	0.	48.35
time (sec)	N/A	0.926	0.736	0.267	0.	2.192	0.	2.152

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	189	0	0	1053	0	4699
normalized size	1	1.	1.12	0.	0.	6.23	0.	27.8
time (sec)	N/A	0.215	0.203	0.263	0.	1.943	0.	1.493

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.065	1.668	0.655	0.	0.	0.	0.

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.063	38.858	0.648	0.	0.	0.	0.

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	488	488	458	0	0	0	0	0
normalized size	1	1.	0.94	0.	0.	0.	0.	0.
time (sec)	N/A	1.615	0.677	0.888	0.	0.	0.	0.

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	311	311	298	0	0	0	0	0
normalized size	1	1.	0.96	0.	0.	0.	0.	0.
time (sec)	N/A	0.811	0.39	0.27	0.	0.	0.	0.

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	134	0	0	0	0	0
normalized size	1	1.	0.96	0.	0.	0.	0.	0.
time (sec)	N/A	0.223	0.063	0.258	0.	0.	0.	0.

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.096	1.215	0.627	0.	0.	0.	0.

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.149	0.367	0.65	0.	0.	0.	0.

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	625	625	545	0	0	0	0	0
normalized size	1	1.	0.87	0.	0.	0.	0.	0.
time (sec)	N/A	1.916	1.391	0.487	0.	0.	0.	0.

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	396	396	348	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.
time (sec)	N/A	1.018	0.567	0.272	0.	0.	0.	0.

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	176	176	160	0	0	0	0	0
normalized size	1	1.	0.91	0.	0.	0.	0.	0.
time (sec)	N/A	0.27	0.203	0.258	0.	0.	0.	0.

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.116	1.948	0.654	0.	0.	0.	0.

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.163	2.182	0.635	0.	0.	0.	0.

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	355	355	315	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	1.307	0.332	0.491	0.	0.	0.	0.

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	208	0	0	0	0	0
normalized size	1	1.	0.91	0.	0.	0.	0.	0.
time (sec)	N/A	0.666	0.181	0.267	0.	0.	0.	0.

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	104	0	0	0	0	0
normalized size	1	1.	1.	0.	0.	0.	0.	0.
time (sec)	N/A	0.179	0.022	0.269	0.	0.	0.	0.

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.104	0.111	0.678	0.	0.	0.	0.

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	404	404	1040	0	0	0	0	0
normalized size	1	1.	2.57	0.	0.	0.	0.	0.
time (sec)	N/A	2.25	2.489	0.887	0.	0.	0.	0.

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	275	275	435	0	0	0	0	0
normalized size	1	1.	1.58	0.	0.	0.	0.	0.
time (sec)	N/A	1.012	1.345	0.263	0.	0.	0.	0.

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	147	147	181	0	0	0	0	0
normalized size	1	1.	1.23	0.	0.	0.	0.	0.
time (sec)	N/A	0.248	0.173	0.268	0.	0.	0.	0.

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.123	0.455	0.676	0.	0.	0.	0.

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	514	514	652	0	0	0	0	0
normalized size	1	1.	1.27	0.	0.	0.	0.	0.
time (sec)	N/A	3.856	6.592	0.83	0.	0.	0.	0.

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	380	380	491	0	0	0	0	0
normalized size	1	1.	1.29	0.	0.	0.	0.	0.
time (sec)	N/A	1.598	2.306	0.273	0.	0.	0.	0.

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F(-2)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	211	0	0	0	0	0
normalized size	1	1.	1.09	0.	0.	0.	0.	0.
time (sec)	N/A	0.339	0.326	0.273	0.	0.	0.	0.

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.13	0.834	0.68	0.	0.	0.	0.

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	171	171	153	0	0	1412	0	0
normalized size	1	1.	0.89	0.	0.	8.26	0.	0.
time (sec)	N/A	0.335	0.378	0.956	0.	2.761	0.	0.

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	124	0	0	844	144	0
normalized size	1	1.	0.89	0.	0.	6.07	1.04	0.
time (sec)	N/A	0.183	0.184	0.688	0.	2.643	7.49	0.

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	89	155	0	483	347	173
normalized size	1	1.	0.86	1.5	0.	4.69	3.37	1.68
time (sec)	N/A	0.137	0.289	0.335	0.	2.522	25.149	1.259

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	86	86	84	0	0	563	90	134
normalized size	1	1.	0.98	0.	0.	6.55	1.05	1.56
time (sec)	N/A	0.126	0.158	0.737	0.	2.563	44.145	1.26

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	120	120	91	0	0	1034	0	286
normalized size	1	1.	0.76	0.	0.	8.62	0.	2.38
time (sec)	N/A	0.16	0.099	0.677	0.	2.688	0.	1.344

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	152	152	91	0	0	1859	0	510
normalized size	1	1.	0.6	0.	0.	12.23	0.	3.36
time (sec)	N/A	0.199	0.087	0.711	0.	2.853	0.	1.421

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	184	184	91	0	0	2865	0	0
normalized size	1	1.	0.49	0.	0.	15.57	0.	0.
time (sec)	N/A	0.278	0.102	0.713	0.	3.176	0.	0.

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	635	635	2450	0	0	0	0	0
normalized size	1	1.	3.86	0.	0.	0.	0.	0.
time (sec)	N/A	4.348	8.829	0.703	0.	0.	0.	0.

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	547	547	365	0	0	0	0	0
normalized size	1	1.	0.67	0.	0.	0.	0.	0.
time (sec)	N/A	2.983	2.124	0.72	0.	0.	0.	0.

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	447	447	646	0	0	0	0	0
normalized size	1	1.	1.45	0.	0.	0.	0.	0.
time (sec)	N/A	2.217	1.605	0.667	0.	0.	0.	0.

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	330	330	356	0	0	0	0	0
normalized size	1	1.	1.08	0.	0.	0.	0.	0.
time (sec)	N/A	1.62	3.692	0.669	0.	0.	0.	0.

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	449	449	657	0	0	0	0	0
normalized size	1	1.	1.46	0.	0.	0.	0.	0.
time (sec)	N/A	2.378	6.18	0.674	0.	0.	0.	0.

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	537	537	1183	0	0	0	0	0
normalized size	1	1.	2.2	0.	0.	0.	0.	0.
time (sec)	N/A	3.084	7.74	0.63	0.	0.	0.	0.

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	625	625	1249	0	0	0	0	0
normalized size	1	1.	2.	0.	0.	0.	0.	0.
time (sec)	N/A	3.927	7.797	0.623	0.	0.	0.	0.

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.088	1.232	0.651	0.	0.	0.	0.

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.078	1.057	0.652	0.	0.	0.	0.

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.082	1.516	0.621	0.	0.	0.	0.

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.087	1.691	0.65	0.	0.	0.	0.

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.332	1.715	0.964	0.	0.	0.	0.

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.31	1.963	0.657	0.	0.	0.	0.

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.324	1.619	0.621	0.	0.	0.	0.

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.112	7.354	0.654	0.	0.	0.	0.

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.117	3.932	0.973	0.	0.	0.	0.

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	34	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.12	0.973	1.007	0.	0.	0.	0.

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	86	0	0	0	0	0
normalized size	1	1.	0.87	0.	0.	0.	0.	0.
time (sec)	N/A	0.106	0.12	0.713	0.	0.	0.	0.

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.057	0.399	0.654	0.	0.	0.	0.

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.055	2.431	0.649	0.	0.	0.	0.

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.111	9.132	0.653	0.	0.	0.	0.

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.09	0.079	0.626	0.	0.	0.	0.

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.097	3.826	0.635	0.	0.	0.	0.

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.114	3.752	0.635	0.	0.	0.	0.

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.055	0.649	0.86	0.	0.	0.	0.

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	432	432	326	0	0	0	0	0
normalized size	1	1.	0.75	0.	0.	0.	0.	0.
time (sec)	N/A	0.957	1.032	0.51	0.	0.	0.	0.

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	281	281	227	0	0	0	0	0
normalized size	1	1.	0.81	0.	0.	0.	0.	0.
time (sec)	N/A	0.529	0.35	0.308	0.	0.	0.	0.

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	131	0	0	192	0	0
normalized size	1	1.	1.	0.	0.	1.47	0.	0.
time (sec)	N/A	0.151	0.121	0.278	0.	2.029	0.	0.

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	0.35	0.678	0.	0.	0.	0.

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	249	249	190	0	0	0	0	0
normalized size	1	1.	0.76	0.	0.	0.	0.	0.
time (sec)	N/A	0.504	0.137	0.731	0.	0.	0.	0.

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	335	335	284	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.832	0.224	0.662	0.	0.	0.	0.

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	515	515	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.201	3.593	0.664	0.	0.	0.	0.

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	316	0	0	0	0	0
normalized size	1	1.	1.1	0.	0.	0.	0.	0.
time (sec)	N/A	1.059	0.029	0.962	0.	0.	0.	0.

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	519	519	1083	0	0	0	0	0
normalized size	1	1.	2.09	0.	0.	0.	0.	0.
time (sec)	N/A	1.411	4.461	1.06	0.	0.	0.	0.

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	427	427	386	0	0	0	0	0
normalized size	1	1.	0.9	0.	0.	0.	0.	0.
time (sec)	N/A	0.817	0.687	0.856	0.	0.	0.	0.

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	258	258	231	0	0	0	0	0
normalized size	1	1.	0.9	0.	0.	0.	0.	0.
time (sec)	N/A	0.545	0.296	0.865	0.	0.	0.	0.

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	120	0	0	0	0	0
normalized size	1	1.	0.93	0.	0.	0.	0.	0.
time (sec)	N/A	0.332	0.119	0.645	0.	0.	0.	0.

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	68	68	67	0	0	0	0	0
normalized size	1	1.	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	0.112	0.007	0.06	0.	0.	0.	0.

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	165	165	117	0	0	0	0	0
normalized size	1	1.	0.71	0.	0.	0.	0.	0.
time (sec)	N/A	0.468	0.068	1.122	0.	0.	0.	0.

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	268	268	225	0	0	0	0	0
normalized size	1	1.	0.84	0.	0.	0.	0.	0.
time (sec)	N/A	0.595	0.306	1.121	0.	0.	0.	0.

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	425	425	363	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.835	0.537	1.024	0.	0.	0.	0.

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	519	519	927	0	0	0	0	0
normalized size	1	1.	1.79	0.	0.	0.	0.	0.
time (sec)	N/A	1.344	0.692	0.856	0.	0.	0.	0.

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	240	240	852	0	0	0	0	0
normalized size	1	1.	3.55	0.	0.	0.	0.	0.
time (sec)	N/A	0.647	0.348	0.637	0.	0.	0.	0.

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	324	0	0	0	0	0
normalized size	1	1.	2.63	0.	0.	0.	0.	0.
time (sec)	N/A	0.275	0.118	0.056	0.	0.	0.	0.

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	288	288	652	0	0	0	0	0
normalized size	1	1.	2.26	0.	0.	0.	0.	0.
time (sec)	N/A	0.899	0.322	1.031	0.	0.	0.	0.

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	463	463	654	0	0	0	0	0
normalized size	1	1.	1.41	0.	0.	0.	0.	0.
time (sec)	N/A	1.183	0.946	1.	0.	0.	0.	0.

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	742	742	4056	0	0	0	0	0
normalized size	1	1.	5.47	0.	0.	0.	0.	0.
time (sec)	N/A	1.831	1.452	0.841	0.	0.	0.	0.

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	349	349	1769	0	0	0	0	0
normalized size	1	1.	5.07	0.	0.	0.	0.	0.
time (sec)	N/A	0.893	0.677	0.628	0.	0.	0.	0.

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	177	177	646	0	0	0	0	0
normalized size	1	1.	3.65	0.	0.	0.	0.	0.
time (sec)	N/A	0.427	0.247	0.058	0.	0.	0.	0.

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	410	410	1350	0	0	0	0	0
normalized size	1	1.	3.29	0.	0.	0.	0.	0.
time (sec)	N/A	1.258	0.531	1.066	0.	0.	0.	0.

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	659	659	1057	0	0	0	0	0
normalized size	1	1.	1.6	0.	0.	0.	0.	0.
time (sec)	N/A	1.716	1.831	1.011	0.	0.	0.	0.

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.26	0.341	0.63	0.	0.	0.	0.

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.071	0.029	0.057	0.	0.	0.	0.

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.302	1.009	0.997	0.	0.	0.	0.

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.341	4.167	0.994	0.	0.	0.	0.

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	35	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.299	2.985	0.626	0.	0.	0.	0.

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.067	0.177	0.062	0.	0.	0.	0.

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.294	30.864	1.017	0.	0.	0.	0.

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	N/A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD
size	37	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.335	48.161	1.008	0.	0.	0.	0.

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [397] had the largest ratio of [1.]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	3	1.	10	0.3
2	A	4	3	1.	10	0.3
3	A	3	3	1.	10	0.3
4	A	2	2	1.	8	0.25
5	A	2	2	1.	10	0.2
6	A	3	3	1.	10	0.3
7	A	4	3	1.	10	0.3

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
8	A	5	3	1.	10	0.3
9	A	7	5	1.	12	0.417
10	A	6	5	1.	12	0.417
11	A	5	5	1.	12	0.417
12	A	4	4	1.	12	0.333
13	A	5	5	1.	12	0.417
14	A	6	5	1.	12	0.417
15	A	7	5	1.	12	0.417
16	A	3	3	1.	10	0.3
17	A	6	3	1.	16	0.188
18	A	5	3	1.	16	0.188
19	A	4	3	1.	16	0.188
20	A	3	2	1.	14	0.143
21	A	3	3	1.	16	0.188
22	A	4	4	1.	16	0.25
23	A	5	4	1.	16	0.25
24	A	7	5	1.	18	0.278
25	A	6	5	1.	18	0.278
26	A	5	5	1.	18	0.278
27	A	4	4	1.	18	0.222
28	A	5	5	1.	18	0.278
29	A	6	5	1.	18	0.278
30	A	7	5	1.	18	0.278
31	A	3	3	1.	16	0.188
32	A	3	3	1.	18	0.167
33	A	3	3	1.	22	0.136
34	A	4	4	1.	25	0.16
35	A	3	2	1.	22	0.091
36	A	3	2	1.	22	0.091
37	A	3	2	1.	22	0.091
38	A	3	2	1.	20	0.1
39	A	3	2	1.	14	0.143
40	A	3	3	1.	22	0.136
41	A	4	3	1.	22	0.136
42	A	3	2	1.	22	0.091
43	A	3	2	1.	22	0.091
44	A	6	6	0.82	24	0.25
45	A	8	7	0.85	24	0.292
46	A	9	7	1.	22	0.318
47	A	4	3	1.	16	0.188
48	A	4	4	1.	24	0.167
49	A	4	4	1.	24	0.167
50	A	9	9	1.15	24	0.375
51	A	13	11	1.09	24	0.458

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
52	A	19	7	1.	24	0.292
53	A	15	7	1.	24	0.292
54	A	11	7	1.	22	0.318
55	A	5	3	1.	16	0.188
56	A	5	5	1.	24	0.208
57	A	5	5	1.	24	0.208
58	A	12	11	1.08	24	0.458
59	A	21	15	0.93	24	0.625
60	A	13	7	1.	22	0.318
61	A	6	3	1.	16	0.188
62	A	6	5	1.	24	0.208
63	A	6	6	1.	24	0.25
64	A	2	2	1.	6	0.333
65	A	3	3	1.	8	0.375
66	A	4	3	1.	8	0.375
67	A	3	3	1.	9	0.333
68	A	4	4	1.	11	0.364
69	A	5	4	1.	11	0.364
70	A	2	2	1.	10	0.2
71	A	2	2	1.	27	0.074
72	A	2	2	1.	18	0.111
73	A	2	2	1.	10	0.2
74	A	2	2	1.	10	0.2
75	A	1	1	1.	10	0.1
76	A	1	1	1.	8	0.125
77	A	2	2	1.	10	0.2
78	A	2	2	1.	10	0.2
79	A	2	2	1.	14	0.143
80	A	2	2	1.	14	0.143
81	A	2	2	1.	14	0.143
82	A	1	1	1.	12	0.083
83	A	2	2	1.	14	0.143
84	A	2	2	1.	14	0.143
85	A	7	7	0.83	16	0.438
86	A	13	11	1.09	16	0.688
87	A	14	7	1.	16	0.438
88	A	14	6	1.	24	0.25
89	A	11	6	1.	24	0.25
90	A	8	6	1.	22	0.273
91	A	3	3	1.	16	0.188
92	A	0	0	0.	0	0.
93	A	0	0	0.	0	0.
94	A	26	7	1.	24	0.292
95	A	20	7	1.	24	0.292

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
96	A	12	7	1.	22	0.318
97	A	4	4	1.	16	0.25
98	A	0	0	0.	0	0.
99	A	0	0	0.	0	0.
100	A	33	7	1.	24	0.292
101	A	17	8	1.	22	0.364
102	A	5	4	1.	16	0.25
103	A	0	0	0.	0	0.
104	A	0	0	0.	0	0.
105	A	17	9	1.	26	0.346
106	A	12	9	1.	24	0.375
107	A	5	5	1.	18	0.278
108	A	0	0	0.	0	0.
109	A	0	0	0.	0	0.
110	A	0	0	0.	0	0.
111	A	20	9	1.	26	0.346
112	A	14	9	1.	24	0.375
113	A	6	5	1.	18	0.278
114	A	0	0	0.	0	0.
115	A	0	0	0.	0	0.
116	A	0	0	0.	0	0.
117	A	23	9	1.	26	0.346
118	A	16	9	1.	24	0.375
119	A	7	5	1.	18	0.278
120	A	0	0	0.	0	0.
121	A	0	0	0.	0	0.
122	A	0	0	0.	0	0.
123	A	18	7	1.	26	0.269
124	A	14	7	1.	26	0.269
125	A	10	7	1.	24	0.292
126	A	4	4	1.	18	0.222
127	A	0	0	0.	0	0.
128	A	33	8	1.	26	0.308
129	A	25	8	1.	26	0.308
130	A	15	8	1.	24	0.333
131	A	5	5	1.	18	0.278
132	A	0	0	0.	0	0.
133	A	59	8	1.	26	0.308
134	A	41	8	1.	26	0.308
135	A	21	9	1.	24	0.375
136	A	6	5	1.	18	0.278
137	A	0	0	0.	0	0.
138	A	6	4	1.	24	0.167
139	A	5	4	1.	24	0.167

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
140	A	4	4	1.	24	0.167
141	A	3	3	1.	24	0.125
142	A	4	4	1.	24	0.167
143	A	5	4	1.	24	0.167
144	A	6	4	1.	24	0.167
145	A	28	15	1.	26	0.577
146	A	21	15	1.	26	0.577
147	A	15	15	1.	26	0.577
148	A	10	12	1.	26	0.462
149	A	14	14	1.	26	0.538
150	A	19	15	1.	26	0.577
151	A	25	15	1.	26	0.577
152	A	0	0	0.	0	0.
153	A	0	0	0.	0	0.
154	A	0	0	0.	0	0.
155	A	0	0	0.	0	0.
156	A	0	0	0.	0	0.
157	A	0	0	0.	0	0.
158	A	0	0	0.	0	0.
159	A	0	0	0.	0	0.
160	A	0	0	0.	0	0.
161	A	0	0	0.	0	0.
162	A	2	2	1.	22	0.091
163	A	0	0	0.	0	0.
164	A	0	0	0.	0	0.
165	A	0	0	0.	0	0.
166	A	0	0	0.	0	0.
167	A	0	0	0.	0	0.
168	A	0	0	0.	0	0.
169	A	0	0	0.	0	0.
170	A	14	6	1.	24	0.25
171	A	11	6	1.	24	0.25
172	A	8	6	1.	22	0.273
173	A	3	3	1.	16	0.188
174	A	0	0	0.	0	0.
175	A	6	5	0.83	30	0.167
176	A	8	6	0.84	30	0.2
177	A	7	6	0.85	30	0.2
178	A	6	5	1.	28	0.179
179	A	3	3	1.	23	0.13
180	A	6	6	1.33	30	0.2
181	A	9	9	1.2	30	0.3
182	A	13	11	1.13	30	0.367
183	A	30	15	1.16	32	0.469

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
184	A	24	15	0.99	32	0.469
185	A	16	10	1.	32	0.312
186	A	8	7	1.	30	0.233
187	A	4	4	1.	25	0.16
188	A	8	8	1.18	32	0.25
189	A	12	11	1.1	32	0.344
190	A	21	15	0.93	32	0.469
191	A	14	8	1.	32	0.25
192	A	12	8	1.	32	0.25
193	A	10	8	1.	32	0.25
194	A	8	7	1.	30	0.233
195	A	4	4	1.	25	0.16
196	A	0	0	0.	0	0.
197	A	0	0	0.	0	0.
198	A	27	14	1.	31	0.452
199	A	20	14	1.	31	0.452
200	A	14	14	1.	31	0.452
201	A	9	11	1.	31	0.355
202	A	13	13	1.	31	0.419
203	A	18	14	1.	31	0.452
204	A	20	14	1.	23	0.609
205	A	14	14	1.	23	0.609
206	A	9	11	1.	23	0.478
207	A	13	13	1.	23	0.565
208	A	18	14	1.	23	0.609
209	A	0	0	0.	0	0.
210	A	12	8	1.	32	0.25
211	A	10	8	1.	32	0.25
212	A	8	7	1.	30	0.233
213	A	4	4	1.	25	0.16
214	A	0	0	0.	0	0.
215	A	0	0	0.	0	0.
216	A	0	0	0.	0	0.
217	A	14	8	1.	29	0.276
218	A	11	8	1.	29	0.276
219	A	8	6	1.	27	0.222
220	A	3	3	1.	22	0.136
221	A	8	4	1.	29	0.138
222	A	12	7	1.	29	0.241
223	A	15	8	1.	29	0.276
224	A	19	12	1.	31	0.387
225	A	10	8	1.	29	0.276
226	A	4	4	1.	24	0.167
227	A	10	5	1.	31	0.161

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
228	A	14	9	1.	31	0.29
229	A	23	13	1.	31	0.419
230	A	12	9	1.	29	0.31
231	A	5	5	1.	24	0.208
232	A	12	6	1.	31	0.194
233	A	17	7	1.	31	0.226
234	A	0	0	0.	0	0.
235	A	0	0	0.	0	0.
236	A	0	0	0.	0	0.
237	A	0	0	0.	0	0.
238	A	0	0	0.	0	0.
239	A	0	0	0.	0	0.
240	A	0	0	0.	0	0.
241	A	0	0	0.	0	0.
242	A	14	8	1.	25	0.32
243	A	11	8	1.	25	0.32
244	A	8	7	1.	23	0.304
245	A	3	3	1.	22	0.136
246	A	7	8	1.	25	0.32
247	A	11	10	1.	25	0.4
248	A	14	10	1.	25	0.4
249	A	15	10	1.	25	0.4
250	A	12	10	1.	25	0.4
251	A	9	8	1.	23	0.348
252	A	4	3	1.	22	0.136
253	A	11	9	1.	25	0.36
254	A	15	10	1.	25	0.4
255	A	18	10	1.	25	0.4
256	A	16	8	1.	27	0.296
257	A	13	8	1.	27	0.296
258	A	8	5	1.	25	0.2
259	A	12	10	1.	27	0.37
260	A	15	9	1.	27	0.333
261	A	16	11	1.	27	0.407
262	A	13	9	1.	27	0.333
263	A	8	4	1.	24	0.167
264	A	14	11	1.	27	0.407
265	A	17	12	1.	27	0.444
266	A	19	13	1.	27	0.482
267	A	16	12	1.	27	0.444
268	A	6	6	1.	25	0.24
269	A	18	13	1.	27	0.482
270	A	21	14	1.	27	0.518
271	A	31	13	1.	27	0.482

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
272	A	28	10	1.	27	0.37
273	A	18	7	1.	24	0.292
274	A	32	12	1.	27	0.444
275	A	10	8	1.	26	0.308
276	A	11	9	1.	26	0.346
277	A	9	7	1.	34	0.206
278	A	11	9	1.	34	0.265
279	A	2	2	1.	26	0.077
280	A	4	4	1.	25	0.16
281	A	4	4	1.	30	0.133
282	A	4	4	1.	29	0.138
283	A	16	8	1.	19	0.421
284	A	11	5	1.	19	0.263
285	A	15	10	1.	19	0.526
286	A	18	9	1.	19	0.474
287	A	16	13	1.	19	0.684
288	A	15	14	1.	19	0.737
289	A	11	10	1.	17	0.588
290	A	11	4	1.	16	0.25
291	A	17	14	1.	19	0.737
292	A	16	14	1.	19	0.737
293	A	23	8	1.	19	0.421
294	A	18	5	1.	19	0.263
295	A	22	10	1.	19	0.526
296	A	23	10	1.	19	0.526
297	A	18	7	1.	17	0.412
298	A	23	10	1.	19	0.526
299	A	22	14	1.	19	0.737
300	A	18	11	1.	19	0.579
301	A	18	4	1.	16	0.25
302	A	24	16	1.	19	0.842
303	A	4	3	1.	23	0.13
304	A	4	3	1.	27	0.111
305	A	4	3	1.	27	0.111
306	A	4	4	1.	27	0.148
307	A	5	4	1.	27	0.148
308	A	4	3	1.	27	0.111
309	A	12	6	1.	16	0.375
310	A	28	19	0.9	29	0.655
311	A	21	12	1.	29	0.414
312	A	10	5	1.	27	0.185
313	A	16	5	1.	29	0.172
314	A	25	14	1.04	29	0.483
315	A	23	16	0.92	29	0.552

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
316	A	16	9	1.	29	0.31
317	A	10	5	1.	26	0.192
318	A	15	9	1.	29	0.31
319	A	28	20	1.03	29	0.69
320	A	34	18	1.	29	0.621
321	A	25	12	1.	29	0.414
322	A	13	7	1.	27	0.259
323	A	29	12	1.	29	0.414
324	A	38	19	1.02	29	0.655
325	A	36	13	1.	29	0.448
326	A	32	10	1.	29	0.345
327	A	20	9	1.	26	0.346
328	A	35	11	1.	29	0.379
329	A	12	6	1.	22	0.273
330	A	10	5	1.	22	0.227
331	A	8	4	1.	20	0.2
332	A	0	0	0.	0	0.
333	A	4	4	1.	32	0.125
334	A	5	5	1.	36	0.139
335	A	4	4	1.	38	0.105
336	A	5	5	1.	38	0.132
337	A	2	2	1.	26	0.077
338	A	4	4	1.	27	0.148
339	A	1	1	1.	38	0.026
340	A	2	2	1.	39	0.051
341	A	1	1	1.	34	0.029
342	A	3	3	1.	35	0.086
343	A	13	7	1.	24	0.292
344	A	11	6	1.	24	0.25
345	A	8	9	1.	22	0.409
346	A	0	0	0.	0	0.
347	A	12	6	1.	25	0.24
348	A	10	5	1.	25	0.2
349	A	8	4	1.	23	0.174
350	A	0	0	0.	0	0.
351	A	10	5	1.	18	0.278
352	A	9	4	1.	18	0.222
353	A	6	3	1.	16	0.188
354	A	6	3	1.	15	0.2
355	A	9	4	1.	18	0.222
356	A	10	5	1.	18	0.278
357	A	11	5	1.	18	0.278
358	A	11	7	1.	24	0.292
359	A	10	7	1.	24	0.292

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
360	A	9	7	1.	22	0.318
361	A	8	6	1.	21	0.286
362	A	4	4	1.	24	0.167
363	A	8	8	1.18	24	0.333
364	A	9	7	1.12	24	0.292
365	A	10	7	1.1	24	0.292
366	A	11	7	1.08	24	0.292
367	A	50	22	1.28	26	0.846
368	A	38	16	1.	24	0.667
369	A	17	12	1.	23	0.522
370	F	0	0	N/A	0	N/A
371	F	0	0	N/A	0	N/A
372	F	0	0	N/A	0	N/A
373	A	28	13	1.	23	0.565
374	F	0	0	N/A	0	N/A
375	A	0	0	0.	0	0.
376	A	0	0	0.	0	0.
377	A	0	0	0.	0	0.
378	A	1	1	1.	16	0.062
379	A	13	7	1.	32	0.219
380	A	13	7	1.05	30	0.233
381	A	11	5	1.18	29	0.172
382	A	11	6	1.39	32	0.188
383	A	11	6	1.76	32	0.188
384	A	17	9	1.7	32	0.281
385	A	25	11	1.56	32	0.344
386	A	35	9	1.	32	0.281
387	A	29	9	1.	32	0.281
388	A	23	9	1.	30	0.3
389	A	17	8	1.	29	0.276
390	A	13	5	1.	32	0.156
391	A	15	9	1.	32	0.281
392	A	23	11	1.	32	0.344
393	A	73	27	0.97	32	0.844
394	A	41	19	1.	31	0.613
395	A	0	0	0.	0	0.
396	A	0	0	0.	0	0.
397	A	148	32	1.	32	1.
398	A	64	22	1.	31	0.71
399	A	0	0	0.	0	0.
400	A	0	0	0.	0	0.
401	A	3	3	1.	40	0.075
402	A	4	4	1.	28	0.143
403	A	4	4	1.	32	0.125

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
404	A	7	4	1.	20	0.2
405	A	6	4	1.	20	0.2
406	A	5	4	1.	20	0.2
407	A	4	3	1.	18	0.167
408	A	4	4	1.	20	0.2
409	A	5	5	1.	20	0.25
410	A	6	5	1.	20	0.25
411	A	8	6	1.	22	0.273
412	A	7	6	1.	22	0.273
413	A	6	6	1.	22	0.273
414	A	5	5	1.	22	0.227
415	A	6	6	1.	22	0.273
416	A	7	6	1.	22	0.273
417	A	8	6	1.	22	0.273
418	A	4	4	1.	20	0.2
419	A	4	4	1.	24	0.167
420	A	4	3	1.	26	0.115
421	A	4	3	1.	26	0.115
422	A	4	3	1.	24	0.125
423	A	4	3	1.	18	0.167
424	A	4	4	1.	26	0.154
425	A	5	4	1.	26	0.154
426	A	4	3	1.	26	0.115
427	A	4	3	1.	26	0.115
428	A	7	7	0.79	28	0.25
429	A	9	8	0.82	28	0.286
430	A	10	8	1.	26	0.308
431	A	5	4	1.	20	0.2
432	A	5	5	1.	28	0.179
433	A	5	5	1.	28	0.179
434	A	10	10	1.16	28	0.357
435	A	16	8	1.	28	0.286
436	A	12	8	1.	26	0.308
437	A	6	4	1.	20	0.2
438	A	6	6	1.	28	0.214
439	A	6	6	1.	28	0.214
440	A	13	12	1.09	28	0.429
441	A	7	4	1.	20	0.2
442	A	7	6	1.	28	0.214
443	A	7	7	1.	28	0.25
444	A	3	3	1.	14	0.214
445	A	12	7	1.	28	0.25
446	A	9	7	1.	26	0.269
447	A	4	4	1.	20	0.2

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
448	A	0	0	0.	0	0.
449	A	0	0	0.	0	0.
450	A	21	8	1.	28	0.286
451	A	13	8	1.	26	0.308
452	A	5	5	1.	20	0.25
453	A	0	0	0.	0	0.
454	A	0	0	0.	0	0.
455	A	34	8	1.	28	0.286
456	A	18	9	1.	26	0.346
457	A	6	5	1.	20	0.25
458	A	0	0	0.	0	0.
459	A	0	0	0.	0	0.
460	A	18	10	1.	30	0.333
461	A	13	10	1.	28	0.357
462	A	6	6	1.	22	0.273
463	A	0	0	0.	0	0.
464	A	0	0	0.	0	0.
465	A	21	10	1.	30	0.333
466	A	15	10	1.	28	0.357
467	A	7	6	1.	22	0.273
468	A	0	0	0.	0	0.
469	A	0	0	0.	0	0.
470	A	15	8	1.	30	0.267
471	A	11	8	1.	28	0.286
472	A	5	5	1.	22	0.227
473	A	0	0	0.	0	0.
474	A	26	9	1.	30	0.3
475	A	16	9	1.	28	0.321
476	A	6	6	1.	22	0.273
477	A	0	0	0.	0	0.
478	A	42	9	1.	30	0.3
479	A	22	10	1.	28	0.357
480	A	7	6	1.	22	0.273
481	A	0	0	0.	0	0.
482	A	7	5	1.	28	0.179
483	A	6	5	1.	28	0.179
484	A	5	5	1.	28	0.179
485	A	4	4	1.	28	0.143
486	A	5	5	1.	28	0.179
487	A	6	5	1.	28	0.179
488	A	7	5	1.	28	0.179
489	A	29	16	1.	30	0.533
490	A	22	16	1.	30	0.533
491	A	16	16	1.	30	0.533

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
492	A	11	13	1.	30	0.433
493	A	15	15	1.	30	0.5
494	A	20	16	1.	30	0.533
495	A	26	16	1.	30	0.533
496	A	0	0	0.	0	0.
497	A	0	0	0.	0	0.
498	A	0	0	0.	0	0.
499	A	0	0	0.	0	0.
500	A	0	0	0.	0	0.
501	A	0	0	0.	0	0.
502	A	0	0	0.	0	0.
503	A	0	0	0.	0	0.
504	A	0	0	0.	0	0.
505	A	0	0	0.	0	0.
506	A	3	3	1.	26	0.115
507	A	0	0	0.	0	0.
508	A	0	0	0.	0	0.
509	A	0	0	0.	0	0.
510	A	0	0	0.	0	0.
511	A	0	0	0.	0	0.
512	A	0	0	0.	0	0.
513	A	0	0	0.	0	0.
514	A	12	7	1.	28	0.25
515	A	9	7	1.	26	0.269
516	A	4	4	1.	20	0.2
517	A	0	0	0.	0	0.
518	A	9	5	1.	28	0.179
519	A	11	9	1.	30	0.3
520	A	12	10	1.	30	0.333
521	A	10	8	1.	38	0.21
522	A	12	10	1.	38	0.263
523	A	15	9	1.	33	0.273
524	A	12	9	1.	33	0.273
525	A	9	7	1.	31	0.226
526	A	4	4	1.	26	0.154
527	A	9	5	1.	33	0.152
528	A	13	8	1.	33	0.242
529	A	16	9	1.	33	0.273
530	A	20	13	1.	35	0.371
531	A	11	9	1.	33	0.273
532	A	5	5	1.	28	0.179
533	A	11	6	1.	35	0.171
534	A	15	10	1.	35	0.286
535	A	24	14	1.	35	0.4

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
536	A	13	10	1.	33	0.303
537	A	6	6	1.	28	0.214
538	A	13	7	1.	35	0.2
539	A	18	8	1.	35	0.229
540	A	0	0	0.	0	0.
541	A	0	0	0.	0	0.
542	A	0	0	0.	0	0.
543	A	0	0	0.	0	0.
544	A	0	0	0.	0	0.
545	A	0	0	0.	0	0.
546	A	0	0	0.	0	0.
547	A	0	0	0.	0	0.

Chapter 3

Listing of integrals

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

Optimal. Leaf size=81

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

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

Rubi [A] time = 0.0350419, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2296, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0077568, size = 74, normalized size = 0.91

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

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.06, size = 129, normalized size = 1.6

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.25579, size = 254, normalized size = 3.14

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
 + d)^2 - 24*e*x + 24*d*log(e*x + d))/e^3) - 6*(d*log(e*x + d)^2 - 2*e*x +
2*d*log(e*x + d))*log((e*x + d)*c)^2/e^2)*e
```

Fricas [A] time = 1.84186, size = 192, normalized size = 2.37

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.62818, size = 88, normalized size = 1.09

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.30065, size = 124, normalized size = 1.53

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=61

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

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

Rubi [A] time = 0.0266686, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2296, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0055952, size = 57, normalized size = 0.93

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

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.063, size = 98, normalized size = 1.6

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.12432, size = 169, normalized size = 2.77

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 1.86053, size = 143, normalized size = 2.34

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.456343, size = 68, normalized size = 1.11

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.29826, size = 96, normalized size = 1.57

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=41

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

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

Rubi [A] time = 0.0184991, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2296, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0044105, size = 40, normalized size = 0.98

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

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.056, size = 67, normalized size = 1.6

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.08999, size = 96, normalized size = 2.34

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 1.8574, size = 99, normalized size = 2.41

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.433221, size = 46, normalized size = 1.12

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.13679, size = 68, normalized size = 1.66

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=21

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

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

Rubi [A] time = 0.0080155, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0044039, size = 21, normalized size = 1.

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

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.064, size = 36, normalized size = 1.7

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.12578, size = 42, normalized size = 2.

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 1.8341, size = 53, normalized size = 2.52

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.372492, size = 26, normalized size = 1.24

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.17423, size = 45, normalized size = 2.14

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Optimal. Leaf size=15

$$\frac{\text{li}(c(d+ex))}{ce}$$

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

Rubi [A] time = 0.0092104, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2298}

$$\frac{\text{li}(c(d+ex))}{ce}$$

Antiderivative was successfully verified.

[In] Int[Log[c*(d + e*x)]^(-1),x]

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

Rule 2389

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

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\log(c(d+ex))} dx &= \frac{\text{Subst}\left(\int \frac{1}{\log(cx)} dx, x, d+ex\right)}{e}\\ &= \frac{\text{li}(c(d+ex))}{ce}\end{aligned}$$

Mathematica [A] time = 0.0076994, size = 15, normalized size = 1.

$$\frac{\text{li}(c(d+ex))}{ce}$$

Antiderivative was successfully verified.

[In] Integrate[Log[c*(d + e*x)]^(-1),x]

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

Maple [F] time = 180., size = 0, normalized size = 0.

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Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.11473, size = 23, normalized size = 1.53

$$\frac{\operatorname{Ei}\left(\log\left(cex + cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.0023, size = 45, normalized size = 3.

$$\frac{\text{log\_integral}\left(cex + cd\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.765209, size = 12, normalized size = 0.8

$$\frac{\operatorname{li}\left(cd + cex\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.27484, size = 22, normalized size = 1.47

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.6 $\int \frac{1}{\log^2(c(d+ex))} dx$

Optimal. Leaf size=36

$$\frac{\text{li}(c(d+ex))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

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

Rubi [A] time = 0.0154824, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2297, 2298}

$$\frac{\text{li}(c(d+ex))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2297

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

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\log^2(c(d+ex))} dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)} dx, x, d+ex\right)}{e} \\
&= -\frac{d+ex}{e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)} dx, x, d+ex\right)}{e} \\
&= -\frac{d+ex}{e\log(c(d+ex))} + \frac{\text{li}(c(d+ex))}{ce}
\end{aligned}$$

Mathematica [A] time = 0.0132051, size = 36, normalized size = 1.

$$\frac{\text{li}(c(d+ex))}{ce} - \frac{d+ex}{e\log(c(d+ex))}$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.059, size = 54, normalized size = 1.5

$$-\frac{x}{\ln(cex+cd)}-\frac{d}{e\ln(cex+cd)}-\frac{\mathrm{Ei}(1,-\ln(cex+cd))}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.12095, size = 27, normalized size = 0.75

$$\frac{\Gamma(-1,-\log(cex+cd))}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="maxima")
```

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

Fricas [A] time = 1.91457, size = 113, normalized size = 3.14

$$-\frac{cex+cd-\log(cex+cd)\,\mathrm{log\_integral}(cex+cd)}{ce\log(cex+cd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="fricas")
```

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

Sympy [A] time = 0.870677, size = 29, normalized size = 0.81

$$\frac{-d-ex}{e\log(c(d+ex))}+\frac{\mathrm{li}(cd+cex)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.24869, size = 51, normalized size = 1.42

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^2,x, algorithm="giac")
```

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

3.7 $\int \frac{1}{\log^3(c(d+ex))} \, dx$

Optimal. Leaf size=63

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

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

Rubi [A] time = 0.024063, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2297, 2298}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2297

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

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{\log^3(c(d+ex))} \, dx &= \frac{\text{Subst}\left(\int \frac{1}{\log^3(cx)} \, dx,x,d+ex\right)}{e}\\
&= -\frac{d+ex}{2e\log^2(c(d+ex))}+\frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)} \, dx,x,d+ex\right)}{2e}\\
&= -\frac{d+ex}{2e\log^2(c(d+ex))}-\frac{d+ex}{2e\log(c(d+ex))}+\frac{\text{Subst}\left(\int \frac{1}{\log(cx)} \, dx,x,d+ex\right)}{2e}\\
&= -\frac{d+ex}{2e\log^2(c(d+ex))}-\frac{d+ex}{2e\log(c(d+ex))}+\frac{\text{li}(c(d+ex))}{2ce}
\end{aligned}$$

Mathematica [A] time = 0.0161225, size = 47, normalized size = 0.75

$$\frac{\frac{\text{li}(c(d+ex))}{c}-\frac{(d+ex)(\log(c(d+ex))+1)}{\log^2(c(d+ex))}}{2e}$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.061, size = 85, normalized size = 1.4

$$-\frac{x}{2\left(\ln\left(cex+cd\right)\right)^{2}}-\frac{d}{2e\left(\ln\left(cex+cd\right)\right)^{2}}-\frac{x}{2\ln\left(cex+cd\right)}-\frac{d}{2e\ln\left(cex+cd\right)}-\frac{\text{Ei}\left(1,-\ln\left(cex+cd\right)\right)}{2ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^3,x)
```

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

Maxima [A] time = 1.12941, size = 28, normalized size = 0.44

$$-\frac{\Gamma\left(-2,-\log\left(cex+cd\right)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="maxima")
```

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

Fricas [A] time = 1.88756, size = 169, normalized size = 2.68

$$-\frac{cex-\log\left(cex+cd\right)^{2}\text{log\_integral}\left(cex+cd\right)+cd+\left(cex+cd\right)\log\left(cex+cd\right)}{2\,ce\log\left(cex+cd\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="fricas")
```

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

Sympy [A] time = 0.917525, size = 48, normalized size = 0.76

$$\frac{-d-ex+\left(-d-ex\right)\log\left(c\left(d+ex\right)\right)}{2e\log\left(c\left(d+ex\right)\right)^{2}}+\frac{\text{li}\left(cd+cex\right)}{2ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**3,x)
```

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

Giac [A] time = 1.27196, size = 81, normalized size = 1.29

$$\frac{\operatorname{Ei}\left(\log\left((xe+d)c\right)\right)e^{(-1)}}{2c} - \frac{(xe+d)e^{(-1)}}{2\log\left((xe+d)c\right)} - \frac{(xe+d)e^{(-1)}}{2\log\left((xe+d)c\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^3,x, algorithm="giac")
```

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

3.8 $\int \frac{1}{\log^4(c(d+ex))} dx$

Optimal. Leaf size=85

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

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

Rubi [A] time = 0.032716, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2297, 2298}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2297

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

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rubi steps

$$\int \frac{1}{\log^4(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^4(cx)}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{3e\log^3(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^3(cx)}\,dx, x, d+ex\right)}{3e}$$

$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log^2(cx)}\,dx, x, d+ex\right)}{6e}$$

$$= -\frac{d+ex}{3e\log^3(c(d+ex))} - \frac{d+ex}{6e\log^2(c(d+ex))} - \frac{d+ex}{6e\log(c(d+ex))} + \frac{\text{Subst}\left(\int \frac{1}{\log(cx)}\,dx, x, d+ex\right)}{6e}$$

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

Mathematica [A] time = 0.0186455, size = 57, normalized size = 0.67

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

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.059, size = 116, normalized size = 1.4

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^4,x)
```

```
[Out] -1/3/ln(c*e*x+c*d)^3*x-1/3/e/ln(c*e*x+c*d)^3*d-1/6/ln(c*e*x+c*d)^2*x-1/6/e/
ln(c*e*x+c*d)^2*d-1/6/ln(c*e*x+c*d)*x-1/6/e/ln(c*e*x+c*d)*d-1/6/c/e*Ei(1,-l
n(c*e*x+c*d))
```

Maxima [A] time = 1.14629, size = 27, normalized size = 0.32

$$\frac{\Gamma(-3, -\log(cex+cd))}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="maxima")
```

```
[Out] gamma(-3, -log(c*e*x + c*d))/(c*e)
```

Fricas [A] time = 1.92004, size = 220, normalized size = 2.59

$$\frac{\log\left(cex+cd\right)^{3}\operatorname{log\_integral}\left(cex+cd\right)-2\,cex-\left(cex+cd\right)\log\left(cex+cd\right)^{2}-2\,cd-\left(cex+cd\right)\log\left(cex+cd\right)}{6\,ce\log\left(cex+cd\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="fricas")
```

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

Sympy [A] time = 0.860454, size = 71, normalized size = 0.84

$$\frac{-d-ex+\left(-\frac{d}{2}-\frac{ex}{2}\right)\log\left(c\left(d+ex\right)\right)^{2}+\left(-\frac{d}{2}-\frac{ex}{2}\right)\log\left(c\left(d+ex\right)\right)}{3e\log\left(c\left(d+ex\right)\right)^{3}}+\frac{\operatorname{li}\left(cd+cex\right)}{6ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**4,x)
```

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

Giac [A] time = 1.21198, size = 109, normalized size = 1.28

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^4,x, algorithm="giac")
```

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

3.9 $\int \log^{\frac{5}{2}}(c(d+ex))\,dx$

Optimal. Leaf size=98

$$-\frac{15\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}+\frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e}-\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}+\frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e}$$

```
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(8*c*e) + (15*(d + e*x)*Sqrt[Lo
g[c*(d + e*x)]])/(4*e) - (5*(d + e*x)*Log[c*(d + e*x)]^(3/2))/(2*e) + ((d +
 e*x)*Log[c*(d + e*x)]^(5/2))/e
```

Rubi [A] time = 0.0495554, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2296, 2299, 2180, 2204}

$$-\frac{15\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}+\frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e}-\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e}+\frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(5/2),x]
```

```
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(8*c*e) + (15*(d + e*x)*Sqrt[Lo
g[c*(d + e*x)]])/(4*e) - (5*(d + e*x)*Log[c*(d + e*x)]^(3/2))/(2*e) + ((d +
 e*x)*Log[c*(d + e*x)]^(5/2))/e
```

Rule 2389

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

Rule 2296

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \log^{\frac{5}{2}}(c(d+ex))\,dx = \frac{\text{Subst}\left(\int \log^{\frac{5}{2}}(cx)\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{5\,\text{Subst}\left(\int \log^{\frac{3}{2}}(cx)\,dx,x,d+ex\right)}{2e}$$
$$= -\frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} + \frac{15\,\text{Subst}\left(\int \sqrt{\log(cx)}\,dx,x,d+ex\right)}{4e}$$
$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{15\,\text{Subst}}{}$$
$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{15\,\text{Subst}}{}$$
$$= \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d+ex)\log^{\frac{5}{2}}(c(d+ex))}{e} - \frac{15\,\text{Subst}}{}$$
$$= -\frac{15\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce} + \frac{15(d+ex)\sqrt{\log(c(d+ex))}}{4e} - \frac{5(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{2e} + \frac{(d}{}$$

Mathematica [A] time = 0.0128011, size = 75, normalized size = 0.77

$$\frac{2c(d+ex)\sqrt{\log(c(d+ex))}\left(4\log^2(c(d+ex))-10\log(c(d+ex))+15\right)-15\sqrt{\pi}\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{8ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(5/2),x]
```

```
[Out] (-15*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]] + 2*c*(d + e*x)*Sqrt[Log[c*(d +
e*x)]]*(15 - 10*Log[c*(d + e*x)] + 4*Log[c*(d + e*x)]^2))/(8*c*e)
```

Maple [F] time = 0.327, size = 0, normalized size = 0.

$$\int (\ln(c(ex+d)))^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))^(5/2),x)
```

```
[Out] int(ln(c*(e*x+d))^(5/2),x)
```

Maxima [C] time = 1.1516, size = 105, normalized size = 1.07

$$\frac{2\,(cex+cd)\left(4\,\log(cex+cd)^{\frac{5}{2}}-10\,\log(cex+cd)^{\frac{3}{2}}+15\,\sqrt{\log(cex+cd)}\right)+15i\,\sqrt{\pi}\,\text{erf}\left(i\,\sqrt{\log(cex+cd)}\right)}{8\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/8*(2*(c*e*x + c*d)*(4*log(c*e*x + c*d)^(5/2) - 10*log(c*e*x + c*d)^(3/2)
+ 15*sqrt(log(c*e*x + c*d))) + 15*I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d))))
/(c*e)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**(5/2),x)
```

```
[Out] Timed out
```

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

$$\int \log\left((ex+d)c\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^(5/2), x)
```

3.10 $\int \log^{\frac{3}{2}}(c(d+ex))\,dx$

Optimal. Leaf size=74

$$\frac{3\sqrt{\pi}\operatorname{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}$$

```
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(4*c*e) - (3*(d + e*x)*Sqrt[Log[c
*(d + e*x)]])/(2*e) + ((d + e*x)*Log[c*(d + e*x)]^(3/2))/e
```

Rubi [A] time = 0.037502, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2296, 2299, 2180, 2204}

$$\frac{3\sqrt{\pi}\operatorname{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(3/2),x]
```

```
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(4*c*e) - (3*(d + e*x)*Sqrt[Log[c
*(d + e*x)]])/(2*e) + ((d + e*x)*Log[c*(d + e*x)]^(3/2))/e
```

Rule 2389

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

Rule 2296

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$
\begin{aligned}
\int \log^{\frac{3}{2}}(c(d+ex))\,dx &= \frac{\text{Subst}\left(\int \log^{\frac{3}{2}}(cx)\,dx,x,d+ex\right)}{e}\\
&= \frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}-\frac{3\,\text{Subst}\left(\int \sqrt{\log(cx)}\,dx,x,d+ex\right)}{2e}\\
&= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}+\frac{3\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}dx,x,d+ex\right)}{4e}\\
&= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}+\frac{3\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}dx,x,\log(c(d+ex))\right)}{4ce}\\
&= -\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}+\frac{3\,\text{Subst}\left(\int e^{x^2}dx,x,\sqrt{\log(c(d+ex))}\right)}{2ce}\\
&= \frac{3\sqrt{\pi}\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{4ce}-\frac{3(d+ex)\sqrt{\log(c(d+ex))}}{2e}+\frac{(d+ex)\log^{\frac{3}{2}}(c(d+ex))}{e}
\end{aligned}
$$

Mathematica [A] time = 0.0098714, size = 63, normalized size = 0.85

$$\frac{3\sqrt{\pi}\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)+2c(d+ex)\sqrt{\log(c(d+ex))}(2\log(c(d+ex))-3)}{4ce}$$

Antiderivative was successfully verified.

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

```
[Out] (3*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]] + 2*c*(d + e*x)*Sqrt[Log[c*(d + e*
x)]]*(-3 + 2*Log[c*(d + e*x)]))/(4*c*e)
```

Maple [F] time = 0.276, size = 0, normalized size = 0.

$$\int (\ln(c(ex+d)))^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))^(3/2),x)
```

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

Maxima [C] time = 1.17343, size = 88, normalized size = 1.19

$$\frac{2\,(cex+cd)\left(2\,\log(cex+cd)^{\frac{3}{2}}-3\,\sqrt{\log(cex+cd)}\right)-3i\,\sqrt{\pi}\,\text{erf}\left(i\,\sqrt{\log(cex+cd)}\right)}{4\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*(c*e*x + c*d)*(2*log(c*e*x + c*d)^(3/2) - 3*sqrt(log(c*e*x + c*d)))
 - 3*I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d))))/(c*e)
```

<u>Fricas</u> [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

<u>Sympy</u> [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))**(3/2),x)
```

```
[Out] Timed out
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \log\left((ex+d)c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(3/2),x, algorithm="giac")
```

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

3.11 $\int \sqrt{\log(c(d+ex))}\,dx$

Optimal. Leaf size=50

$$\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}$$

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

Rubi [A] time = 0.0313145, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2296, 2299, 2180, 2204}

$$\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\sqrt{\pi}\,\mathrm{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$
\begin{aligned}
\int \sqrt{\log(c(d+ex))}\,dx &= \frac{\text{Subst}\left(\int \sqrt{\log(cx)}\,dx,x,d+ex\right)}{e}\\
&= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx,x,d+ex\right)}{2e}\\
&= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx,x,\log(c(d+ex))\right)}{2ce}\\
&= \frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\text{Subst}\left(\int e^{x^2}\,dx,x,\sqrt{\log(c(d+ex))}\right)}{ce}\\
&= -\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}+\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}
\end{aligned}
$$

Mathematica [A] time = 0.0085198, size = 50, normalized size = 1.

$$
\frac{(d+ex)\sqrt{\log(c(d+ex))}}{e}-\frac{\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{2ce}
$$

Antiderivative was successfully verified.

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

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

Maple [F] time = 0.342, size = 0, normalized size = 0.

$$
\int \sqrt{\ln\left(c\left(ex+d\right)\right)}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [C] time = 1.2155, size = 66, normalized size = 1.32

$$
-\frac{-i\sqrt{\pi}\,\text{erf}\left(i\sqrt{\log\left(cex+cd\right)}\right)-2\left(cex+cd\right)\sqrt{\log\left(cex+cd\right)}}{2\,ce}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*(-I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d))) - 2*(c*e*x + c*d)*sqrt(log(
c*e*x + c*d)))/(c*e)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 4.11946, size = 90, normalized size = 1.8

$$\begin{cases} \tilde{\infty} x & \text{for } c = 0 \\ x\sqrt{\log(cd)} & \text{for } e = 0 \\ \frac{\left(\sqrt{-\log(cd+cex)}(cd+cex)+\frac{\sqrt{\pi}\,\mathrm{erfc}\left(\sqrt{-\log(cd+cex)}\right)}{2}\right)\sqrt{\log(cd+cex)}}{ce\sqrt{-\log(cd+cex)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((zoo*x, Eq(c, 0)), (x*sqrt(log(c*d)), Eq(e, 0)), ((sqrt(-log(c*d
+ c*e*x))*(c*d + c*e*x) + sqrt(pi)*erfc(sqrt(-log(c*d + c*e*x)))/2)*sqrt(lo
g(c*d + c*e*x))/(c*e*sqrt(-log(c*d + c*e*x))), True))
```

Giac [A] time = 1.31059, size = 74, normalized size = 1.48

$$-\frac{\sqrt{\pi} i\,\mathrm{erf}\left(-i\sqrt{\log(cxe+cd)}\right)e^{(-1)}}{2\,c}+\frac{(cxe+cd)e^{(-1)}\sqrt{\log(cxe+cd)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*i*erf(-i*sqrt(log(c*x*e + c*d)))*e^(-1)/c + (c*x*e + c*d)*e^(
-1)*sqrt(log(c*x*e + c*d))/c
```

3.12 $\int \frac{1}{\sqrt{\log(c(d+ex))}} dx$

Optimal. Leaf size=25

$$\frac{\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)
```

Rubi [A] time = 0.0219619, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2389, 2299, 2180, 2204}

$$\frac{\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[Log[c*(d + e*x)]],x]

[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)
```

Rule 2389

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{\sqrt{\log(c(d+ex))}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{ce}$$
$$= \frac{2\,\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}$$
$$= \frac{\sqrt{\pi}\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Mathematica [A] time = 0.0019845, size = 25, normalized size = 1.

$$\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[Log[c*(d + e*x)]],x]
```

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(c*e)
```

Maple [F] time = 0.229, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{\ln(c(ex+d))}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [C] time = 1.22635, size = 34, normalized size = 1.36

$$-\frac{i\sqrt{\pi}\,\text{erf}\left(i\sqrt{\log(cex+cd)}\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="maxima")
```

```
[Out] -I*sqrt(pi)*erf(I*sqrt(log(c*e*x + c*d)))/(c*e)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 5.08629, size = 63, normalized size = 2.52

$$\begin{cases} 0 & \text{for } c = 0 \\ \frac{x}{\sqrt{\log(cd)}} & \text{for } e = 0 \\ \frac{\sqrt{\pi}\sqrt{-\log(cd+cex)}\operatorname{erfc}\left(\sqrt{-\log(cd+cex)}\right)}{ce\sqrt{\log(cd+cex)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((0, Eq(c, 0)), (x/sqrt(log(c*d)), Eq(e, 0)), (sqrt(pi)*sqrt(-log(
c*d + c*e*x))*erfc(sqrt(-log(c*d + c*e*x)))/(c*e*sqrt(log(c*d + c*e*x))), T
rue))
```

Giac [A] time = 1.31681, size = 35, normalized size = 1.4

$$\frac{\sqrt{\pi}i\operatorname{erf}\left(-i\sqrt{\log(cxe+cd)}\right)e^{(-1)}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(1/2),x, algorithm="giac")
```

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

3.13 $\int \frac{1}{\log^{\frac{3}{2}}(c(d+ex))} dx$

Optimal. Leaf size=49

$$\frac{2\sqrt{\pi}\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce} - \frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

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

Rubi [A] time = 0.0301805, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2297, 2299, 2180, 2204}

$$\frac{2\sqrt{\pi}\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce} - \frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2297

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{\log^{\frac{3}{2}}(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{2\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}}\,dx, x, \log(c(d+ex))\right)}{ce}$$

$$= -\frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}} + \frac{4\,\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{ce}$$

$$= \frac{2\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{ce} - \frac{2(d+ex)}{e\sqrt{\log(c(d+ex))}}$$

Mathematica [A] time = 0.024192, size = 58, normalized size = 1.18

$$\frac{2\sqrt{-\log(c(d+ex))}\,\text{Gamma}\left(\frac{1}{2}, -\log(c(d+ex))\right) - 2c(d+ex)}{ce\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*c*(d + e*x) + 2*Gamma[1/2, -Log[c*(d + e*x)]]*Sqrt[-Log[c*(d + e*x)]])/
(c*e*Sqrt[Log[c*(d + e*x)]])
```

Maple [F] time = 0.259, size = 0, normalized size = 0.

$$\int (\ln(c(ex+d)))^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/ln(c*(e*x+d))^(3/2),x)
```

Maxima [A] time = 1.25852, size = 61, normalized size = 1.24

$$-\frac{\sqrt{-\log(cex+cd)}\,\Gamma\left(-\frac{1}{2}, -\log(cex+cd)\right)}{ce\sqrt{\log(cex+cd)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="maxima")
```

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

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 143.548, size = 92, normalized size = 1.88

$$\begin{cases} 0 & \text{for}\: c = 0 \\ \frac{x}{\log{(cd)}^{\frac{3}{2}}} & \text{for}\: e = 0 \\ \frac{(-\log{(cd+cex)})^{\frac{3}{2}}\left(-2\sqrt{\pi}\operatorname{erfc}\left(\sqrt{-\log{(cd+cex)}}\right)+\frac{2(cd+cex)}{\sqrt{-\log{(cd+cex)}}}\right)}{ce\log{(cd+cex)}^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((0, Eq(c, 0)), (x/log(c*d)**(3/2), Eq(e, 0)), ((-log(c*d + c*e*x)
)**(3/2)*(-2*sqrt(pi)*erfc(sqrt(-log(c*d + c*e*x))) + 2*(c*d + c*e*x)/sqrt(
-log(c*d + c*e*x)))/(c*e*log(c*d + c*e*x)**(3/2)), True))
```

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

$$\int \frac{1}{\log\left((ex+d)c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(3/2),x, algorithm="giac")
```

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

3.14 $\int \frac{1}{\log^{\frac{5}{2}}(c(d+ex))}\,dx$

Optimal. Leaf size=77

$$\frac{4\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce}-\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))}-\frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

```
[Out] (4*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(3*c*e) - (2*(d + e*x))/(3*e*Log[
c*(d + e*x)]^(3/2)) - (4*(d + e*x))/(3*e*Sqrt[Log[c*(d + e*x)]])
```

Rubi [A] time = 0.038312, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2297, 2299, 2180, 2204}

$$\frac{4\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce}-\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))}-\frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(3*c*e) - (2*(d + e*x))/(3*e*Log[
c*(d + e*x)]^(3/2)) - (4*(d + e*x))/(3*e*Sqrt[Log[c*(d + e*x)]])
```

Rule 2389

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

Rule 2297

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{\log^{\frac{5}{2}}(c(d+ex))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{5}{2}}(cx)}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} + \frac{2\,\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)}\,dx, x, d+ex\right)}{3e}$$

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{4\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}}\,dx, x, d+ex\right)}{3e}$$

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

$$= -\frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}} + \frac{8\,\text{Subst}\left(\int e^{x^2}\,dx, x, \sqrt{\log(c(d+ex))}\right)}{3ce}$$

$$= \frac{4\sqrt{\pi}\,\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{3ce} - \frac{2(d+ex)}{3e\log^{\frac{3}{2}}(c(d+ex))} - \frac{4(d+ex)}{3e\sqrt{\log(c(d+ex))}}$$

Mathematica [A] time = 0.0291489, size = 72, normalized size = 0.94

$$-\frac{2\left(2(-\log(c(d+ex)))^{3/2}\text{Gamma}\left(\frac{1}{2}, -\log(c(d+ex))\right) + c(d+ex)(2\log(c(d+ex))+1)\right)}{3ce\log^{\frac{3}{2}}(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-5/2),x]
```

```
[Out] (-2*(2*Gamma[1/2, -Log[c*(d + e*x)]]*(-Log[c*(d + e*x)])^(3/2) + c*(d + e*x
)*(1 + 2*Log[c*(d + e*x)])))/(3*c*e*Log[c*(d + e*x)]^(3/2))
```

Maple [F] time = 0.272, size = 0, normalized size = 0.

$$\int (\ln(c(ex+d)))^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^(5/2),x)
```

```
[Out] int(1/ln(c*(e*x+d))^(5/2),x)
```

Maxima [A] time = 1.2611, size = 61, normalized size = 0.79

$$-\frac{(-\log(cex+cd))^{\frac{3}{2}}\,\Gamma\left(-\frac{3}{2}, -\log(cex+cd)\right)}{ce\log(cex+cd)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="maxima")
```

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

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**(5/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\log\left((ex+d)c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^(-5/2), x)
```

3.15 $\int \frac{1}{\log^{\frac{7}{2}}(c(d+ex))} dx$

Optimal. Leaf size=101

$$\frac{8\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce}-\frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))}-\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))}-\frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

```
[Out] (8*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(15*c*e) - (2*(d + e*x))/(5*e*Log
[c*(d + e*x)]^(5/2)) - (4*(d + e*x))/(15*e*Log[c*(d + e*x)]^(3/2)) - (8*(d
+ e*x))/(15*e*Sqrt[Log[c*(d + e*x)]])
```

Rubi [A] time = 0.0487596, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {2389, 2297, 2299, 2180, 2204}

$$\frac{8\sqrt{\pi}\,\text{Erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce}-\frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))}-\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))}-\frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)]^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*Erfi[Sqrt[Log[c*(d + e*x)]]])/(15*c*e) - (2*(d + e*x))/(5*e*Log
[c*(d + e*x)]^(5/2)) - (4*(d + e*x))/(15*e*Log[c*(d + e*x)]^(3/2)) - (8*(d
+ e*x))/(15*e*Sqrt[Log[c*(d + e*x)]])
```

Rule 2389

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

Rule 2297

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

Rule 2299

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{\log^{\frac{7}{2}}(c(d+ex))} dx = \frac{\text{Subst}\left(\int \frac{1}{\log^{\frac{7}{2}}(cx)} dx, x, d+ex\right)}{e}$$
$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} + \frac{2\,\text{Subst}\left(\int \frac{1}{\log^{\frac{5}{2}}(cx)} dx, x, d+ex\right)}{5e}$$
$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} + \frac{4\,\text{Subst}\left(\int \frac{1}{\log^{\frac{3}{2}}(cx)} dx, x, d+ex\right)}{15e}$$
$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{8\,\text{Subst}\left(\int \frac{1}{\sqrt{\log(cx)}} dx, x, \right.}{15e}$$
$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{8\,\text{Subst}\left(\int \frac{e^x}{\sqrt{x}} dx, x, \log(\right.}{15ce}$$
$$= -\frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}} + \frac{16\,\text{Subst}\left(\int e^{x^2} dx, x, \sqrt{\text{lo}}\right.}{15ce}$$
$$= \frac{8\sqrt{\pi}\text{erfi}\left(\sqrt{\log(c(d+ex))}\right)}{15ce} - \frac{2(d+ex)}{5e\log^{\frac{5}{2}}(c(d+ex))} - \frac{4(d+ex)}{15e\log^{\frac{3}{2}}(c(d+ex))} - \frac{8(d+ex)}{15e\sqrt{\log(c(d+ex))}}$$

Mathematica [A] time = 0.0338453, size = 85, normalized size = 0.84

$$\frac{8(-\log(c(d+ex)))^{5/2}\text{Gamma}\left(\frac{1}{2},-\log(c(d+ex))\right) - 2c(d+ex)\left(4\log^2(c(d+ex)) + 2\log(c(d+ex)) + 3\right)}{15ce\log^{\frac{5}{2}}(c(d+ex))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)]^(-7/2),x]
```

```
[Out] (8*Gamma[1/2, -Log[c*(d + e*x)]]*(-Log[c*(d + e*x)])^(5/2) - 2*c*(d + e*x)*
(3 + 2*Log[c*(d + e*x)] + 4*Log[c*(d + e*x)]^2))/(15*c*e*Log[c*(d + e*x)]^(
5/2))
```

Maple [F] time = 0.344, size = 0, normalized size = 0.

$$\int (\ln(c(ex+d)))^{-\frac{7}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/ln(c*(e*x+d))^(7/2),x)
```

```
[Out] int(1/ln(c*(e*x+d))^(7/2),x)
```

Maxima [A] time = 1.28965, size = 61, normalized size = 0.6

$$-\frac{(-\log(cex+cd))^{\frac{5}{2}}\Gamma\left(-\frac{5}{2},-\log(cex+cd)\right)}{ce\log(cex+cd)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="maxima")
```

```
[Out] -(-log(c*e*x + c*d))^(5/2)*gamma(-5/2, -log(c*e*x + c*d))/(c*e*log(c*e*x +
c*d)^(5/2))
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/ln(c*(e*x+d))**(7/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\log((ex+d)c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/log(c*(e*x+d))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(log((e*x + d)*c)^(-7/2), x)
```

3.16 $\int \log^p(c(d+ex))\,dx$

Optimal. Leaf size=45

$$\frac{(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))\text{Gamma}(p+1,-\log(c(d+ex)))}{ce}$$

```
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

Rubi [A] time = 0.0283106, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2389, 2299, 2181}

$$\frac{(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))\text{Gamma}(p+1,-\log(c(d+ex)))}{ce}$$

Antiderivative was successfully verified.

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

```
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

Rule 2389

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

Rule 2299

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

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \log^p(c(d+ex))\,dx &= \frac{\text{Subst}\left(\int \log^p(cx)\,dx, x, d+ex\right)}{e}\\ &= \frac{\text{Subst}\left(\int e^x x^p\,dx, x, \log(c(d+ex))\right)}{ce}\\ &= \frac{\Gamma(1+p,-\log(c(d+ex)))(-\log(c(d+ex)))^{-p}\log^p(c(d+ex))}{ce}\end{aligned}$$

Mathematica [A] time = 0.0155742, size = 45, normalized size = 1.

$$\frac{(-\log(c(d+ex)))^{-p}\log^{p}(c(d+ex))\text{Gamma}(p+1,-\log(c(d+ex)))}{ce}$$

Antiderivative was successfully verified.

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

```
[Out] (Gamma[1 + p, -Log[c*(d + e*x)]]*Log[c*(d + e*x)]^p)/(c*e*(-Log[c*(d + e*x)
])^p)
```

Maple [F] time = 0.224, size = 0, normalized size = 0.

$$\int (\ln(c(ex+d)))^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(ln(c*(e*x+d))^p,x)
```

Maxima [A] time = 1.25065, size = 72, normalized size = 1.6

$$-\frac{(-\log(cex+cd))^{-p-1}\log(cex+cd)^{p+1}\,\Gamma\left(p+1,-\log(cex+cd)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.15524, size = 66, normalized size = 1.47

$$\frac{\cos\left(\pi p\right)\Gamma\left(p+1,-\log(cex+cd)\right)}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] cos(pi*p)*gamma(p + 1, -log(c*e*x + c*d))/(c*e)
```

Sympy [A] time = 42.0275, size = 54, normalized size = 1.2

$$\begin{cases} \tilde{\infty}^{p}x & \text{for}\ c=0 \\ x\log(cd)^{p} & \text{for}\ e=0 \\ \frac{(-\log(cd+cex))^{-p}\log(cd+cex)^{p}\Gamma\left(p+1,-\log(cd+cex)\right)}{ce} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((zoo**p*x, Eq(c, 0)), (x*log(c*d)**p, Eq(e, 0)), ((-log(c*d + c*e
*x))**(-p)*log(c*d + c*e*x)**p*uppergamma(p + 1, -log(c*d + c*e*x))/(c*e),
True))
```

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

$$\int \log \left((ex+d)c\right)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(log((e*x + d)*c)^p, x)
```

3.17 $\int (a+b\log(c(d+ex)^n))^4\,dx$

Optimal. Leaf size=131

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

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

Rubi [A] time = 0.0738035, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0551883, size = 112, normalized size = 0.85

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^4 - 4bn\left((d+ex)(a+b\log(c(d+ex)^n))^3 - 3bn\left((d+ex)(a+b\log(c(d+ex)^n))^2 - 2bn\right.\right.}{e}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 1.475, size = 15871, normalized size = 121.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.20283, size = 675, normalized size = 5.15

$$b^4x\log\left((ex+d)^n c\right)^4 + 4\,ab^3x\log\left((ex+d)^n c\right)^3 - 4\,a^3ben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + 6\,a^2b^2x\log\left((ex+d)^n c\right)^2 + 4\,a^3bx\log$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
 (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a^2*b^2 - 4*(3*e*n*(x
/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*
d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2
- 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*a*b^3 - (4*e*n*(x/e
- d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^3 + (e*n*((d*log(e*x + d)^4 + 4*d*
log(e*x + d)^3 + 12*d*log(e*x + d)^2 - 24*e*x + 24*d*log(e*x + d))*n^2/e^3
- 4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n*lo
g((e*x + d)^n*c)/e^3) + 6*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*l
og((e*x + d)^n*c)^2/e^2)*e*n)*b^4 + a^4*x
```

Fricas [B] time = 2.0372, size = 1312, normalized size = 10.02

$$\frac{b^4ex\log(c)^4 + \left(b^4en^4x + b^4dn^4\right)\log(ex+d)^4 - 4\left(b^4en - ab^3e\right)x\log(c)^3 - 4\left(b^4dn^4 - ab^3dn^3 + \left(b^4en^4 - ab^3en^3\right)x - \left(b^4e\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 9.23738, size = 1059, normalized size = 8.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
log(d + e*x)**4/e - 4*b**4*d*n**4*log(d + e*x)**3/e + 12*b**4*d*n**4*log(d
+ e*x)**2/e - 24*b**4*d*n**4*log(d + e*x)/e + 4*b**4*d*n**3*log(c)*log(d +
e*x)**3/e - 12*b**4*d*n**3*log(c)*log(d + e*x)**2/e + 24*b**4*d*n**3*log(c)
*log(d + e*x)/e + 6*b**4*d*n**2*log(c)**2*log(d + e*x)**2/e - 12*b**4*d*n**
2*log(c)**2*log(d + e*x)/e + 4*b**4*d*n*log(c)**3*log(d + e*x)/e + b**4*n**
4*x*log(d + e*x)**4 - 4*b**4*n**4*x*log(d + e*x)**3 + 12*b**4*n**4*x*log(d
+ e*x)**2 - 24*b**4*n**4*x*log(d + e*x) + 24*b**4*n**4*x + 4*b**4*n**3*x*lo
g(c)*log(d + e*x)**3 - 12*b**4*n**3*x*log(c)*log(d + e*x)**2 + 24*b**4*n**3
*x*log(c)*log(d + e*x) - 24*b**4*n**3*x*log(c) + 6*b**4*n**2*x*log(c)**2*lo
g(d + e*x)**2 - 12*b**4*n**2*x*log(c)**2*log(d + e*x) + 12*b**4*n**2*x*log(
c)**2 + 4*b**4*n*x*log(c)**3*log(d + e*x) - 4*b**4*n*x*log(c)**3 + b**4*x*l
og(c)**4, Ne(e, 0)), (x*(a + b*log(c*d**n))**4, True))
```

Giac [B] time = 1.27707, size = 1050, normalized size = 8.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.18 $\int (a+b\log (c(d+ex)^n))^3\,dx$

Optimal. Leaf size=99

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

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

Rubi [A] time = 0.0532955, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0114443, size = 85, normalized size = 0.86

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(ex(a-bn)+b(d+ex)\log\left(c(d+ex)^n\right)\right)\right)}{e}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.688, size = 4872, normalized size = 49.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 6*ln(c)*b^3*n^2*x+3*ln(c)*a^2*b*x+3*ln(c)^2*a*b^2*x-3*ln(c)^2*b^3*n*x+ln(c)
^3*b^3*x+3/4*b*(4*a^2*e*x-4*b^2*d*n^2*ln(e*x+d)^2+8*ln(e*x+d)*a*b*d*n-8*ln(
e*x+d)*b^2*d*n^2+8*b^2*e*n^2*x-Pi^2*b^2*e*x*csgn(I*c*(e*x+d)^n)^6-Pi^2*b^2*
e*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^5+4*ln(c)^2*b^2*e*x+4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2+4*I*ln(c)*Pi*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+8*ln(c)*
a*b*e*x-8*ln(c)*b^2*e*n*x-Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)
^n)^4+2*Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+8*ln(e*x+d)*ln
(c)*b^2*d*n+4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*b*e*x*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2+4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2+2*Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^3+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+4*I*P
i*b^2*e*n*x*csgn(I*c*(e*x+d)^n)^3-4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*c*(e*x+d)
^n)^3-4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-4*I*Pi*b^2*e*n*x*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-8*a*b*e*n*x-Pi^2*b^2*e*x*csgn(I*c)^2*c
sgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)-4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)-4*I*Pi*a*b*e*x*csgn(I*c*(e*x+d)^n)^3-4*I*ln(c)*Pi*b^2*e*x*csgn(I
*c*(e*x+d)^n)^3-4*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^4)/e*ln((e*x+d)^n)+3/2*b^2*(-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3+2*ln(c
)*b*e*x+2*ln(e*x+d)*b*d*n-2*b*e*n*x+2*a*e*x)/e*ln((e*x+d)^n)^2-3*a^2*b*n*x+
6*b^3*d*n^3/e*ln(e*x+d)+a^3*x-3/4/e*ln(e*x+d)*Pi^2*b^3*d*n*csgn(I*c*(e*x+d)
^n)^6+6/e*ln(c)*ln(e*x+d)*a*b^2*d*n+3/2*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^3+b^3*x*ln((e*x+d)^n)^3-3/4/e*ln(e*x+d)*Pi^2*b^
3*d*n*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2/e*ln(e*x+d)
*Pi^2*b^3*d*n*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+3/2/e*ln(
e*x+d)*Pi^2*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3/e
*ln(e*x+d)*Pi^2*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-3
*I/e*ln(e*x+d)*ln(c)*Pi*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)-3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+6*a*b^2*n^2*x+1/e*b^3*d*n^3*ln(e*x+d)^3+3/e*b^3*d*n^3*ln(e*x+d)^2-3/
```

4*ln(c)*Pi^2*b^3*x*csgn(I*c*(e*x+d)^n)^6+3/4*Pi^2*b^3*n*x*csgn(I*c*(e*x+d)^
n)^6-3/4*Pi^2*a*b^2*x*csgn(I*c*(e*x+d)^n)^6-6*ln(c)*a*b^2*n*x+1/8*I*Pi^3*b^
3*x*csgn(I*c*(e*x+d)^n)^9-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*c*(e*x+d)
^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4*ln(c)*Pi^2*b
^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+3/4*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*c*(e*x
+d)^n)^4-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+3/4*Pi^2*b^3*n*x*
csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn
(I*c*(e*x+d)^n)^3-3/2*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e
*x+d)^2-3/2*I/e*Pi*b^3*d*n^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x
+d)^2-3*I/e*ln(e*x+d)*ln(c)*Pi*b^3*d*n*csgn(I*c*(e*x+d)^n)^3-3*I/e*Pi*b^3*d
*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*b^3*d*n^2*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+3*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)*ln(e*x+d)+3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2+3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
-3/4/e*ln(e*x+d)*Pi^2*b^3*d*n*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2/e*ln(e*
x+d)*Pi^2*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4/e*ln(e*x+d)*Pi^2*b^3*
d*n*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2/e*ln(e*x+d)*Pi^2*b^3*d*n*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+
d)^n)^3*ln(e*x+d)^2+3*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+d)^n)^3*ln(e*x+d)-3*I*
Pi*a*b^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-3*I*ln(c)*Pi*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*ln(c)
*Pi*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b^3*n^2*x*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-1/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3
*b^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^8-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c*(e*x+d)^n)^3
-3*I*Pi*b^3*n^2*x*csgn(I*c*(e*x+d)^n)^3-3/2*I*Pi*a^2*b*x*csgn(I*c*(e*x+d)^n
)^3-3/2*Pi^2*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/4*Pi^2*a*b^2
*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^5-3/4*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*P
i^2*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/e*ln(c)*b^3*d*n^2*ln(
e*x+d)^2+3/e*ln(c)^2*ln(e*x+d)*b^3*d*n-6/e*ln(c)*ln(e*x+d)*b^3*d*n^2-3/e*a*
b^2*d*n^2*ln(e*x+d)^2-6/e*ln(e*x+d)*a*b^2*d*n^2+3/e*ln(e*x+d)*a^2*b*d*n-1/8
*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)^
2*csgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^8-6*
b^3*n^3*x+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*b^3*n^2*x*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b^3*n^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*a*b^2*n*x*csgn(I
c(e*x+d)^n)^3+3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/2*I*Pi*a
^2*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I*Pi^3*b^3*x*csgn(I*c)^3
csgn(I(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^3-3/8*I*Pi^3*b^3*x*csgn(I*c)^3*csg
n(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d
)^n)^3*csgn(I*c*(e*x+d)^n)^4+9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)
^2*csgn(I*c*(e*x+d)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^3*csgn(I*c*
(e*x+d)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d
)^n)^6+9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^7+3
/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3*Pi^2*
a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-3/4*ln(c)*Pi^2*b^
3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2*ln(c)*Pi^2*b^
3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+3/2*ln(c)*Pi^2*b^3*

```
x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3*ln(c)*Pi^2*b^3*x*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+3/4*Pi^2*b^3*n*x*csgn(I*c)^
2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-3/2*Pi^2*b^3*n*x*csgn(I*c)^2*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*(e*
x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+3*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^4-3/4*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn
(I*c*(e*x+d)^n)^2+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/
2*I*ln(c)^2*Pi*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3/2*I/e*Pi*b^3
*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(e*x+d)^2+3*I/e*ln
(e*x+d)*ln(c)*Pi*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I/e*ln(e*x+d)*ln
(c)*Pi*b^3*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
```

Maxima [B] time = 1.19165, size = 381, normalized size = 3.85

$$b^3x\log\left((ex+d)^nc\right)^3-3\,a^2ben\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+3\,ab^2x\log\left((ex+d)^nc\right)^2+3\,a^2bx\log\left((ex+d)^nc\right)-3\left(2\,en\left(\frac{x}{e}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^3*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*n*(x/e - d*log(e*x + d)/e^2) + 3*a*b
^2*x*log((e*x + d)^n*c)^2 + 3*a^2*b*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e -
d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*lo
g(e*x + d))*n^2/e)*a*b^2 - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^
n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x
+ d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x
+ d)^n*c)/e^2))*b^3 + a^3*x
```

Fricas [B] time = 1.99156, size = 699, normalized size = 7.06

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 3.88329, size = 527, normalized size = 5.32

$$\begin{cases} a^3x+\frac{3a^2bdn\log(d+ex)}{e}+3a^2bnx\log(d+ex)-3a^2bnx+3a^2bx\log(c)+\frac{3ab^2dn^2\log(d+ex)^2}{e}-\frac{6ab^2dn^2\log(d+ex)}{e}+\frac{6ab^2dn\log(\cdots}{e} \\ x\left(a+b\log(cd^n)\right)^3 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**3*x + 3*a**2*b*d*n*log(d + e*x)/e + 3*a**2*b*n*x*log(d + e*x)
 - 3*a**2*b*n*x + 3*a**2*b*x*log(c) + 3*a*b**2*d*n**2*log(d + e*x)**2/e - 6
*a*b**2*d*n**2*log(d + e*x)/e + 6*a*b**2*d*n*log(c)*log(d + e*x)/e + 3*a*b*
*2*n**2*x*log(d + e*x)**2 - 6*a*b**2*n**2*x*log(d + e*x) + 6*a*b**2*n**2*x
+ 6*a*b**2*n*x*log(c)*log(d + e*x) - 6*a*b**2*n*x*log(c) + 3*a*b**2*x*log(c
)**2 + b**3*d*n**3*log(d + e*x)**3/e - 3*b**3*d*n**3*log(d + e*x)**2/e + 6*
b**3*d*n**3*log(d + e*x)/e + 3*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 6*b**
3*d*n**2*log(c)*log(d + e*x)/e + 3*b**3*d*n*log(c)**2*log(d + e*x)/e + b**3
*n**3*x*log(d + e*x)**3 - 3*b**3*n**3*x*log(d + e*x)**2 + 6*b**3*n**3*x*log
(d + e*x) - 6*b**3*n**3*x + 3*b**3*n**2*x*log(c)*log(d + e*x)**2 - 6*b**3*n
**2*x*log(c)*log(d + e*x) + 6*b**3*n**2*x*log(c) + 3*b**3*n*x*log(c)**2*log
(d + e*x) - 3*b**3*n*x*log(c)**2 + b**3*x*log(c)**3, Ne(e, 0)), (x*(a + b*l
og(c*d**n))**3, True))
```

Giac [B] time = 1.2769, size = 552, normalized size = 5.58

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^3*n^3*e^(-1)*log(x*e + d)^3 - 3*(x*e + d)*b^3*n^3*e^(-1)*log(x*
e + d)^2 + 3*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b
^3*n^3*e^(-1)*log(x*e + d) + 3*(x*e + d)*a*b^2*n^2*e^(-1)*log(x*e + d)^2 -
6*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*n*e^(-1)*l
og(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*n^3*e^(-1) - 6*(x*e + d)*a*b^2*n^2*e
^(-1)*log(x*e + d) + 6*(x*e + d)*b^3*n^2*e^(-1)*log(c) + 6*(x*e + d)*a*b^2*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*n*e^(-1)*log(c)^2 + (x*e + d
)*b^3*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*n^2*e^(-1) + 3*(x*e + d)*a^2*b*n*
e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*n*e^(-1)*log(c) + 3*(x*e + d)*a*b^2
*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*n*e^(-1) + 3*(x*e + d)*a^2*b*e^(-1)*lo
g(c) + (x*e + d)*a^3*e^(-1)
```

3.19 $\int (a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=65

$$\frac{(d+ex)\,(a+b\log(c(d+ex)^n))^2}{e}-2abnx-\frac{2b^2n(d+ex)\log(c(d+ex)^n)}{e}+2b^2n^2x$$

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

Rubi [A] time = 0.0347364, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$\frac{(d+ex)\,(a+b\log(c(d+ex)^n))^2}{e}-2abnx-\frac{2b^2n(d+ex)\log(c(d+ex)^n)}{e}+2b^2n^2x$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0085129, size = 59, normalized size = 0.91

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-2bn\left(ax+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{e}-bnx\right)$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.078, size = 130, normalized size = 2.

$$xa^2+b^2x\left(\ln\left(ce^{n\ln(ex+d)}\right)\right)^2+\frac{b^2d\left(\ln\left(ce^{n\ln(ex+d)}\right)\right)^2}{e}+2b^2n^2x-2b^2nx\ln\left(ce^{n\ln(ex+d)}\right)-2\frac{\ln(ex+d)b^2dn^2}{e}+2ab\ln\left(c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.29862, size = 177, normalized size = 2.72

$$-2aben\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+b^2x\log\left((ex+d)^nc\right)^2+2abx\log\left((ex+d)^nc\right)-\left(2en\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)\log\left((ex+d)^nc\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] time = 1.97066, size = 311, normalized size = 4.78

$$\frac{b^2ex\log(c)^2+\left(b^2en^2x+b^2dn^2\right)\log(ex+d)^2-2\left(b^2en-abe\right)x\log(c)+\left(2b^2en^2-2aben+a^2e\right)x-2\left(b^2dn^2-abdn+\left(\right.\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
)/e
```

Sympy [A] time = 1.50867, size = 211, normalized size = 3.25

$$\begin{cases} a^2x + \frac{2abdn\log(d+ex)}{e} + 2abnx\log(d+ex) - 2abnx + 2abx\log(c) + \frac{b^2dn^2\log(d+ex)^2}{e} - \frac{2b^2dn^2\log(d+ex)}{e} + \frac{2b^2dn\log(c)\log(d+e}{e} \\ x(a+b\log(cd^n))^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*x + 2*a*b*d*n*log(d + e*x)/e + 2*a*b*n*x*log(d + e*x) - 2*a
*b*n*x + 2*a*b*x*log(c) + b**2*d*n**2*log(d + e*x)**2/e - 2*b**2*d*n**2*log
(d + e*x)/e + 2*b**2*d*n*log(c)*log(d + e*x)/e + b**2*n**2*x*log(d + e*x)**
2 - 2*b**2*n**2*x*log(d + e*x) + 2*b**2*n**2*x + 2*b**2*n*x*log(c)*log(d +
e*x) - 2*b**2*n*x*log(c) + b**2*x*log(c)**2, Ne(e, 0)), (x*(a + b*log(c*d**
n))**2, True))
```

Giac [B] time = 1.30928, size = 240, normalized size = 3.69

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.20 $\int (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=29

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

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

Rubi [A] time = 0.0145399, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2389, 2295}

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.006368, size = 29, normalized size = 1.

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.059, size = 36, normalized size = 1.2

$$ax + b\ln\left(c\left(ex+d\right)^{n}\right)x - bnx + \frac{\ln\left(ex+d\right)bdn}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.1105, size = 54, normalized size = 1.86

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.06593, size = 93, normalized size = 3.21

$$\frac{bex\log\left(c\right) - (ben - ae)x + (benx + bdn)\log\left(ex+d\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.567474, size = 42, normalized size = 1.45

$$ax + b\left(\begin{cases} \frac{dn\log\left(d+ex\right)}{e} + nx\log\left(d+ex\right) - nx + x\log\left(c\right) & \text{for}\ e \neq 0 \\ x\log\left(cd^{n}\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(e*x+d)**n),x)
```

```
[Out] a*x + b*Piecewise((d*n*log(d + e*x)/e + n*x*log(d + e*x) - n*x + x*log(c),
Ne(e, 0)), (x*log(c*d**n), True))
```

Giac [A] time = 1.24343, size = 62, normalized size = 2.14

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*lo
g(c))*b + a*x
```

3.21 $\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=63

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rubi [A] time = 0.0549784, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rule 2389

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

Rule 2300

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

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e}\\
&= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\operatorname{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}\\
&= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}
\end{aligned}$$

Mathematica [A] time = 0.0661016, size = 63, normalized size = 1.

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Maple [C] time = 0.527, size = 312, normalized size = 5.

$$-\frac{1}{enb}\mathrm{e}^{-\frac{-ib\pi\,\mathrm{csgn}(ic)\mathrm{csgn}\left(i(ex+d)^n\right)\mathrm{csgn}\left(ic(ex+d)^n\right)+ib\pi\,\mathrm{csgn}(ic)\left(\mathrm{csgn}\left(ic(ex+d)^n\right)\right)^2+ib\pi\,\mathrm{csgn}\left(i(ex+d)^n\right)\left(\mathrm{csgn}\left(ic(ex+d)^n\right)\right)^2-ib\pi\left(\mathrm{csgn}\left(ic(ex+d)^n\right)\right)^3-2bn\ln(ex+d)+2b\ln(c)+2b\ln}{2bn}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/e/b/n*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+
I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3-2*b*n*ln(e*x+d)+2*b*ln(c)+2*b*ln((e
*x+d)^n)+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*
(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

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

$$\int \frac{1}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 1.94837, size = 113, normalized size = 1.79

$$\frac{e^{\left(-\frac{b\log(c)+a}{bn}\right)}\,\mathrm{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)}{ben}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)))/
(b*e*n)
```

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

$$\int \frac{1}{a + b\log\left(c(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(1/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A] time = 1.16597, size = 66, normalized size = 1.05

$$\frac{\mathrm{Ei}\left(\frac{\log(c)}{n} + \frac{a}{bn} + \log(xe+d)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.22 $\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=96

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rubi [A] time = 0.0613845, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2389

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

Rule 2297

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

Rule 2300

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

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{ben(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{ben}$$
$$= -\frac{d+ex}{ben(a+b\log(c(d+ex)^n))} + \frac{\left((d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log(c(\right.}{ben^2}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2} - \frac{d+ex}{ben(a+b\log(c(d+ex)^n))}$$

Mathematica [A] time = 0.0658548, size = 123, normalized size = 1.28

$$-\frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(bne^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}} - (a+b\log(c(d+ex)^n))\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{b^2en^2(a+b\log(c(d+ex)^n))}$$

Antiderivative was successfully verified.

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

```
[Out] -(((d + e*x)*(b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1) - ExpIntegralEi[(a + b
*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e*E^(a/(b*n))
*n^2*(c*(d + e*x)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])))
```

Maple [C] time = 0.541, size = 457, normalized size = 4.8

$$-2\frac{ex+d}{\left(2a+2b\ln(c)+2b\ln\left((ex+d)^n\right) - ib\pi\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d)^n\right) + ib\pi\,\text{csgn}(ic)\left(\text{csgn}\left(ic(e\right.\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)/b/n/e*(e*x+d)-1/b^
2/n^2/e*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)
^n)-n*ln(e*x+d))+2*a)/b/n)*exp(1/2*(I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*n*ln(e*x+d)-2*b
*ln(c)-2*b*ln((e*x+d)^n)-2*a)/b/n)
```

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

$$-\frac{ex+d}{b^2en\log\left((ex+d)^n\right) + b^2en\log(c) + aben} + \int \frac{1}{b^2n\log\left((ex+d)^n\right) + b^2n\log(c) + abn}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n) + integrat
e(1/(b^2*n*log((e*x + d)^n) + b^2*n*log(c) + a*b*n), x)
```

Fricas [A] time = 1.96283, size = 292, normalized size = 3.04

$$-\frac{\left((benx+bdn)e^{\left(\frac{b\log(c)+a}{bn}\right)}-(bn\log(ex+d)+b\log(c)+a)\,\text{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{b^3en^3\log(ex+d)+b^3en^2\log(c)+ab^2en^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

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

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

$$\int\frac{1}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-2), x)
```

Giac [B] time = 1.24836, size = 414, normalized size = 4.31

$$\frac{bn\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}\right)}\log(xe+d)}{\left(b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e\right)c^{\left(\frac{1}{n}\right)}}-\frac{(xe+d)bn}{b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e}+\frac{b\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\text{l}\right.}{\left(b^3n^3e\log(xe+d)+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)/((b^3*n
^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) - (x*e + d)*b*
n/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e) + b*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^3*n^3*e*log(x*e + d) + b
^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) + a*Ei(log(c)/n + a/(b*n) + log(x*e
 + d))*e^(-a/(b*n))/((b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2
*e)*c^(1/n))
```

3.23 $\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=135

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rubi [A] time = 0.0812606, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2389

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

Rule 2297

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

Rule 2300

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

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^3}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{d+ex}{2ben(a+b\log(c(d+ex)^n))^2} + \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{2ben}$$

$$= -\frac{d+ex}{2ben(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,\ldots\right)}{2b^2en^2}$$

$$= -\frac{d+ex}{2ben(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2(a+b\log(c(d+ex)^n))} + \frac{((d+ex)(c(d+ex)^n)\ldots}{\ldots}$$

$$= \frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{d+ex}{2ben(a+b\log(c(d+ex)^n))^2} - \frac{\ldots}{2b^2e\ldots}$$

Mathematica [A] time = 0.0950437, size = 144, normalized size = 1.07

$$-\frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(bne^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}(a+b\log(c(d+ex)^n)+bn)-(a+b\log(c(d+ex)^n))^2\,\text{Ei}\left(\frac{a+b\log(c(d+ex\ldots}{bn}\right.\ldots\right.}{2b^3en^3(a+b\log(c(d+ex)^n))^2}$$

Antiderivative was successfully verified.

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

```
[Out] -((d + e*x)*(-(ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c
*(d + e*x)^n])^2) + b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*(a + b*n + b*Log
[c*(d + e*x)^n])))/(2*b^3*e*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)*(a + b*L
og[c*(d + e*x)^n])^2)
```

Maple [C] time = 0.543, size = 735, normalized size = 5.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(2*b*e*n*x+2*b*d*n+I*Pi*b*d*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b
*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d*csgn(I*c*(e*x+d)^n)^3
-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+2*ln(c)*b*e*x+2*b*e*x*ln((e*x+d)^n)+2*ln(c)*b*d+2*a*e*x+2*b*d*ln((
e*x+d)^n)+2*a*d)/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)^2/b^
2/n^2/e-1/2/b^3/n^3/e*exp(-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3-2*b*n*ln(e*x+d)+2*b*ln
(c)+2*b*ln((e*x+d)^n)+2*a)/b/n)*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*
```

```
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2
*b*ln(c)+2*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)
```

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

$$-\frac{(dn+d\log{(c)})b+ad+((en+e\log{(c)})b+ae)x+(bex+bd)\log{\left((ex+d)^n\right)}}{2\left(b^4en^2\log{\left((ex+d)^n\right)}^2+b^4en^2\log{(c)}^2+2\,ab^3en^2\log{(c)}+a^2b^2en^2+2\left(b^4en^2\log{(c)}+ab^3en^2\right)\log{\left((ex+d)^n\right)}\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

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

Fricas [B] time = 2.04376, size = 632, normalized size = 4.68

$$-\frac{\left(\left(b^2dn^2+abdn+\left(b^2en^2+aben\right)x+\left(b^2en^2x+b^2dn^2\right)\log{(ex+d)}+\left(b^2enx+b^2dn\right)\log{(c)}\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}-\left(b^2n^2\log{(\right.}\right.}{2\left(b^5en^5\log{(ex+d)}^2+b^5en^3\log{(c)}^2+2\,ab^4en^3\log\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*d*n^2 + a*b*d*n + (b^2*e*n^2 + a*b*e*n)*x + (b^2*e*n^2*x + b^2*d
*n^2)*log(e*x + d) + (b^2*e*n*x + b^2*d*n)*log(c))*e^((b*log(c) + a)/(b*n))
 - (b^2*n^2*log(e*x + d)^2 + b^2*log(c)^2 + 2*a*b*log(c) + a^2 + 2*(b^2*n*l
og(c) + a*b*n)*log(e*x + d))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)
)))*e^(-(b*log(c) + a)/(b*n))/(b^5*e*n^5*log(e*x + d)^2 + b^5*e*n^3*log(c)^
2 + 2*a*b^4*e*n^3*log(c) + a^2*b^3*e*n^3 + 2*(b^5*e*n^4*log(c) + a*b^4*e*n^
4)*log(e*x + d))
```

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

$$\int \frac{1}{\left(a+b\log{\left(c\,(d+ex)^n\right)}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3), x)
```

Giac [B] time = 1.32825, size = 1785, normalized size = 13.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

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

3.24 $\int (a+b\log(c(d+ex)^n))^{5/2}\,dx$

Optimal. Leaf size=179

$$-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e}+\frac{(d+ex)}{}$$

```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```

Rubi [A] time = 0.147619, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e}+\frac{(d+ex)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```


```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```


Rule 2389

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

Rule 2296

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{5/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{5/2}\,dx, x, d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e} - \frac{(5bn)\,\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,dx, x, d+ex\right)}{2e}$$

$$= -\frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e} + \frac{(15b^2n^2 \ldots}{\ldots}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+\ldots}{\ldots}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+\ldots}{\ldots}$$

$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+\ldots}{\ldots}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e} + \frac{15b^2n^2(d+ex)\sqrt{a \ldots}}{4 \ldots}$$

Mathematica [A] time = 0.214639, size = 152, normalized size = 0.85

$$\frac{(d+ex)\left(8(a+b\log(c(d+ex)^n))^{5/2} - 5bn\left(3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log(c(d+\ldots}\right.\right.}{8e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(8*(a + b*Log[c*(d + e*x)^n])^(5/2) - 5*b*n*((3*b^(3/2)*n^(3/2)*
Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*n
+ 2*b*Log[c*(d + e*x)^n]))))/(8*e)
```

Maple [F] time = 0.717, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c(ex+d)^n\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

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

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

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

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.25 $\int (a+b\log(c(d+ex)^n))^{3/2}\,dx$

Optimal. Leaf size=143

$$\frac{3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)\sqrt{a+b}}{2e}$$

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rubi [A] time = 0.106902, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)\sqrt{a+b}}{2e}$$

Antiderivative was successfully verified.

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

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rule 2389

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

Rule 2296

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int (a+b\log (c(d+ex)^n))^{3/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log (cx^n))^{3/2}\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log (c(d+ex)^n))^{3/2}}{e} - \frac{(3bn)\,\text{Subst}\left(\int \sqrt{a+b\log (cx^n)}\,dx,x,d+ex\right)}{2e}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log (c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log (c(d+ex)^n))^{3/2}}{e} + \frac{\left(3b^2n^2\right.}{}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log (c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log (c(d+ex)^n))^{3/2}}{e} + \frac{\left(3b^2n(\right.}{}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log (c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log (c(d+ex)^n))^{3/2}}{e} + \frac{\left(3bn(d\right.}{}$$
$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e} - \frac{3bn(d+ex)\sqrt{a+}}{2}$$

Mathematica [A] time = 0.0669751, size = 127, normalized size = 0.89

$$\frac{(d+ex)\left(3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\,(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log (c(d+ex)^n)}\,(2a+2b\log (c(d+ex)^n)-\right.}{4e}$$

Antiderivative was successfully verified.

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

```
[Out] ((d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Lo
g[c*(d + e*x)^n]]*(2*a - 3*b*n + 2*b*Log[c*(d + e*x)^n])))/(4*e)
```

Maple [F] time = 0.507, size = 0, normalized size = 0.

$$\int \left(a+b\ln \left(c\,(ex+d)^n\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

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

$$\int \left(b\log \left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

$$\int \left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2), x)
```

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

$$\int \left(b \log \left(\left(ex + d\right)^{n} c\right) + a\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.26 $\int \sqrt{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=111

$$\frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{e}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e}$$

```
[Out] -(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(S
qrt[b]*Sqrt[n])])/(2*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*Sqr
t[a + b*Log[c*(d + e*x)^n]])/e
```

Rubi [A] time = 0.0912926, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{e}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(S
qrt[b]*Sqrt[n])])/(2*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*Sqr
t[a + b*Log[c*(d + e*x)^n]])/e
```

Rule 2389

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

Rule 2296

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \sqrt{a+b\log(c(d+ex)^n)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{e} - \frac{(bn)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{2e}$$
$$= \frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{e} - \frac{\left(b(d+ex)\,(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx,x,\log(c$$
$$= \frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{e} - \frac{\left((d+ex)\,(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx,x,\sqrt{a+$$
$$= -\frac{\sqrt{b}e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e} + \frac{(d+ex)\sqrt{a+b\log(c(d-$$

Mathematica [A] time = 0.0461003, size = 106, normalized size = 0.95

$$\frac{(d+ex)\left(2\sqrt{a+b\log(c(d+ex)^n)}-\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}\,(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*(-((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))) + 2*Sqrt[a + b*L
og[c*(d + e*x)^n]]))/(2*e)
```

Maple [F] time = 0.441, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\,(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

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

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

$$\int \sqrt{a + b \log \left(c (d + ex)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n)), x)
```

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

$$\int \sqrt{b \log \left((ex + d)^n c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.27 $\int \frac{1}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=80

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rubi [A] time = 0.0734574, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2389, 2300, 2180, 2204}

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rule 2389

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}$$
$$= \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{ben}$$
$$= \frac{e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

Mathematica [A] time = 0.0159141, size = 80, normalized size = 1.

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Maple [F] time = 0.454, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

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

$$\int \frac{1}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

$$\int \frac{1}{\sqrt{a + b\log\left(c\left(d + ex\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(1/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

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

$$\int \frac{1}{\sqrt{b\log\left(\left(ex + d\right)^{n}c\right) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.28 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.101096, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2389

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

Rule 2297

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{ben}$$
$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(2(d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx, x, \log(c$$
$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(4(d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx, x, \sqrt{a}$$
$$= \frac{2e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}} - \frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Mathematica [A] time = 0.116222, size = 139, normalized size = 1.2

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}} - \sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\,\text{Gamma}\left(\frac{1}{2}, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

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

[Out] (-2*(d + e*x)*(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1) - Gamma[1/2, -((a + b*Log
[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]))/(b*e*E
^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F] time = 0.526, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{1}{\left(b\log\left(\left(ex + d\right)^{n} c\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

3.29 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=156

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.119951, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2389

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

Rule 2297

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+ex\right)}{3ben}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\,\text{Subst}\left(\int \frac{}{\sqrt{a+}}\right.}{}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(4(d+ex)(c(d\right.}{}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(8(d+ex)(c(d\right.}{}$$

$$= \frac{4e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}} - \frac{2(d+ex)}{3ben(a+b\log(c(d+ex)}$$

Mathematica [A] time = 0.176087, size = 163, normalized size = 1.04

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(2bn\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)+e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}(2a+2b\,\text{lo}\right.}{3b^2en^2(a+b\log(c(d+ex)^n))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*b*n*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a
+ b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*
(2*a + b*n + 2*b*Log[c*(d + e*x)^n])))/(3*b^2*e*E^(a/(b*n))*n^2*(c*(d + e*x
)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])^(3/2))
```

Maple [F] time = 0.522, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c(ex+d)^n\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

3.30 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{7/2}}\,dx$

Optimal. Leaf size=192

$$\frac{8\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{15b^{7/2}en^{7/2}}-\frac{8(d+ex)}{15b^3en^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{4(d+ex)}{15b^2en^2\,(a+b\log\left(c(d+\right.}$$

```
[Out] (8*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(15*b^(7/2)*e*E^(a/(b*n))*n^(7/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x)
)/(5*b*e*n*(a + b*Log[c*(d + e*x)^n])^(5/2)) - (4*(d + e*x))/(15*b^2*e*n^2*
(a + b*Log[c*(d + e*x)^n])^(3/2)) - (8*(d + e*x))/(15*b^3*e*n^3*Sqrt[a + b*
Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.148631, antiderivative size = 192, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{8\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{15b^{7/2}en^{7/2}}-\frac{8(d+ex)}{15b^3en^3\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{4(d+ex)}{15b^2en^2\,(a+b\log\left(c(d+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(15*b^(7/2)*e*E^(a/(b*n))*n^(7/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x)
)/(5*b*e*n*(a + b*Log[c*(d + e*x)^n])^(5/2)) - (4*(d + e*x))/(15*b^2*e*n^2*
(a + b*Log[c*(d + e*x)^n])^(3/2)) - (8*(d + e*x))/(15*b^3*e*n^3*Sqrt[a + b*
Log[c*(d + e*x)^n]])
```

Rule 2389

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

Rule 2297

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

Rule 2300

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

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{7/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{7/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{5/2}}\,dx, x, d+ex\right)}{5ben}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4\,\text{Subst}\left(\int \frac{}{(a+}\right.}{}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{8(d}{15b^3en^3\sqrt{a+b}}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{8(d}{15b^3en^3\sqrt{a+b}}$$

$$= -\frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{5/2}} - \frac{4(d+ex)}{15b^2en^2\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{8(d}{15b^3en^3\sqrt{a+b}}$$

$$= \frac{8e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{15b^{7/2}en^{7/2}} - \frac{2(d+ex)}{5ben\,(a+b\log(c(d+ex)^n))^{}}$$

Mathematica [A] time = 0.216294, size = 203, normalized size = 1.06

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\left(e^{\frac{a}{bn}}\,(c(d+ex)^n)^{\frac{1}{n}}\left(4a^2+2b(4a+bn)\log(c(d+ex)^n)+2abn+4b^2\log^2(c(d+ex)^n)+3b^2\right.\right.}{15b^3en^3\,(a+b\log(c(d+ex)^n))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-7/2),x]
```

```
[Out] (-2*(d + e*x)*(-4*b^2*n^2*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(
-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(5/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^
(-1)*(4*a^2 + 2*a*b*n + 3*b^2*n^2 + 2*b*(4*a + b*n)*Log[c*(d + e*x)^n] + 4*
b^2*Log[c*(d + e*x)^n]^2)))/(15*b^3*e*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1
)*(a + b*Log[c*(d + e*x)^n])^(5/2))
```

Maple [F] time = 0.453, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\,(ex+d)^n\right)\right)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(7/2),x)

[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(7/2),x)
```

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

$$\int \frac{1}{\left(b \log \left((ex+d)^n c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="maxima")

[Out] integrate((b*log((e*x + d)^n*c) + a)^(-7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="fricas")

[Out] Exception raised: UnboundLocalError
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(7/2),x)

[Out] Timed out
```

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

$$\int \frac{1}{\left(b \log \left((ex+d)^n c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(7/2),x, algorithm="giac")

[Out] integrate((b*log((e*x + d)^n*c) + a)^(-7/2), x)
```

3.31 $\int (a+b\log(c(d+ex)^n))^p\,dx$

Optimal. Leaf size=103

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

Rubi [A] time = 0.058868, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2181}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^p\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

Rule 2389

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

Rule 2300

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

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rubi steps

$$\int (a+b\log (c(d+ex)^n))^p \, dx = \frac{\text{Subst}\left(\int (a+b\log (cx^n))^p \, dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int e^{\frac{x}{n}}(a+bx)^p \, dx, x, \log (c(d+ex)^n)\right)}{en}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\Gamma\left(1+p, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log (c(d+ex)^n))^p \left(-\frac{a+b}{}\right.}{e}$$

Mathematica [A] time = 0.0937072, size = 103, normalized size = 1.

$$\frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}(a+b\log (c(d+ex)^n))^p \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-p} \text{Gamma}\left(p+1, -\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] ((d + e*x)*Gamma[1 + p, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^p)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^p)
```

Maple [F] time = 0.463, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\,(ex+d)^n\right)\right)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^p,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^p,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 2.23652, size = 143, normalized size = 1.39

$$\frac{e^{\left(-\frac{bnp\log\left(-\frac{1}{bn}\right)+b\log(c)+a}{bn}\right)}\Gamma\left(p+1, -\frac{bn\log(ex+d)+b\log(c)+a}{bn}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] e^(-(b*n*p*log(-1/(b*n)) + b*log(c) + a)/(b*n))*gamma(p + 1, -(b*n*log(e*x
+ d) + b*log(c) + a)/(b*n))/e
```

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

$$\int \left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**p,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**p, x)
```

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

$$\int \left(b\log\left((ex + d)^{n}c\right) + a\right)^{p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^p, x)
```

3.32 $\int \left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\,dx$

Optimal. Leaf size=88

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^2e}$$

```
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

Rubi [A] time = 0.0675028, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2299, 2181}

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^2e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*Sqrt[d + e*x]])^p,x]
```

```
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

Rule 2389

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

Rule 2299

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

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rubi steps

$$\int \left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\,dx = \frac{\text{Subst}\left(\int \left(a+b\log\left(c\sqrt{x}\right)\right)^p\,dx, x, d+ex\right)}{e}$$
$$= \frac{2\,\text{Subst}\left(\int e^{2x}(a+bx)^p\,dx, x, \log\left(c\sqrt{d+ex}\right)\right)}{c^2e}$$
$$= \frac{2^{-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}}{c^2e}$$

Mathematica [A] time = 0.0500074, size = 88, normalized size = 1.

$$\frac{2^{-p}e^{-\frac{2a}{b}}\left(a+b\log\left(c\sqrt{d+ex}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d+ex}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2\left(a+b\log\left(c\sqrt{d+ex}\right)\right)}{b}\right)}{c^2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*Sqrt[d + e*x]])^p,x]
```

```
[Out] (Gamma[1 + p, (-2*(a + b*Log[c*Sqrt[d + e*x]]))/b]*(a + b*Log[c*Sqrt[d + e*
x]])^p)/(2^p*c^2*e*E^((2*a)/b)*(-((a + b*Log[c*Sqrt[d + e*x]])/b))^p)
```

Maple [F] time = 0.267, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\sqrt{ex+d}\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^(1/2)))^p,x)
```

Maxima [A] time = 1.30587, size = 80, normalized size = 0.91

$$-\frac{2\left(b\log\left(\sqrt{ex+d}c\right)+a\right)^{p+1}e^{\left(-\frac{2a}{b}\right)}E_{-p}\left(-\frac{2\left(b\log\left(\sqrt{ex+d}c\right)+a\right)}{b}\right)}{bc^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="maxima")
```

```
[Out] -2*(b*log(sqrt(e*x + d)*c) + a)^(p + 1)*e^(-2*a/b)*exp_integral_e(-p, -2*(b
*log(sqrt(e*x + d)*c) + a)/b)/(b*c^2*e)
```

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

$$\text{integral}\left(\left(b\log\left(\sqrt{ex+d}c\right)+a\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log(sqrt(e*x + d)*c) + a)^p, x)
```

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

$$\int \left(a + b \log \left(c\sqrt{d + ex}\right)\right)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*log(c*sqrt(d + e*x)))**p, x)
```

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

$$\int \left(b \log \left(\sqrt{ex + d}c\right) + a\right)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^(1/2)))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(sqrt(e*x + d)*c) + a)^p, x)
```

3.33 $\int \frac{(e+fx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx$

Optimal. Leaf size=20

$$\frac{\mathrm{li}\left(d(e+fx)^p\right)}{dfp}$$

```
[Out] LogIntegral[d*(e + f*x)^p]/(d*f*p)
```

Rubi [A] time = 0.0467459, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2390, 2307, 2298}

$$\frac{\mathrm{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] LogIntegral[d*(e + f*x)^p]/(d*f*p)
```

Rule 2390

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

Rule 2307

```
Int[(x_)^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[1/n, Subst[Int[1/Log
[c*x], x], x, x^n], x] /; FreeQ[{c, m, n}, x] && EqQ[m, n - 1]
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(e+fx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx &= \frac{\mathrm{Subst}\left(\int \frac{x^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}\\
&= \frac{\mathrm{Subst}\left(\int \frac{1}{\log(dx)}\,dx, x, (e+fx)^p\right)}{fp}\\
&= \frac{\mathrm{li}\left(d(e+fx)^p\right)}{dfp}
\end{aligned}$$

Mathematica [A] time = 0.0268894, size = 20, normalized size = 1.

$$\frac{\mathrm{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] LogIntegral[d*(e + f*x)^p]/(d*f*p)
```

Maple [A] time = 0.11, size = 26, normalized size = 1.3

$$-\frac{\mathrm{Ei}\left(1,-\ln\left(d\left(fx+e\right)^{p}\right)\right)}{pfd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^(-1+p)/ln(d*(f*x+e)^p),x)
```

```
[Out] -1/p/f/d*Ei(1,-ln(d*(f*x+e)^p))
```

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

$$\int \frac{\left(fx+e\right)^{p-1}}{\log\left(\left(fx+e\right)^{p}d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^(p - 1)/log((f*x + e)^p*d), x)
```

Fricas [A] time = 1.96998, size = 50, normalized size = 2.5

$$\frac{\mathrm{Ei}\left(p\log\left(fx+e\right)+\log\left(d\right)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="fricas")
```

```
[Out] Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

Sympy [A] time = 45.0141, size = 42, normalized size = 2.1

$$\begin{cases} -\frac{\begin{cases} -\frac{\log\left(e+fx\right)}{\log\left(d\right)} & \text{for}\ p=0 \\ -\frac{\mathrm{li}\left(d\left(e+fx\right)^{p}\right)}{dp} & \text{otherwise} \end{cases}}{f} & \text{for}\ f\neq 0 \\ \frac{e^{p-1}x}{\log\left(de^{p}\right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**(-1+p)/ln(d*(f*x+e)**p),x)
```

```
[Out] Piecewise((-Piecewise((-log(e + f*x)/log(d), Eq(p, 0)), (-li(d*(e + f*x)**p
)/(d*p), True))/f, Ne(f, 0)), (e**(p - 1)*x/log(d*e**p), True))
```

Giac [A] time = 1.29802, size = 31, normalized size = 1.55

$$\frac{\text{Ei}\left(p\log\left(fx+e\right)+\log\left(d\right)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

3.34 $\int \frac{(eg+fgx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx$

Optimal. Leaf size=42

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\text{li}\left(d(e+fx)^p\right)}{dfp}$$

```
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*LogIntegral[d*(e + f*x)^p])/(d*f*
p)
```

Rubi [A] time = 0.0760003, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {2390, 2308, 2307, 2298}

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\text{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Int[(e*g + f*g*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*LogIntegral[d*(e + f*x)^p])/(d*f*
p)
```

Rule 2390

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

Rule 2308

```
Int[((d_)*(x_))^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[(d*x)^m/x^m,
Int[x^m/Log[c*x^n], x], x] /; FreeQ[{c, d, m, n}, x] && EqQ[m, n - 1]
```

Rule 2307

```
Int[(x_)^(m_.)/Log[(c_.)*(x_)^(n_)], x_Symbol] :> Dist[1/n, Subst[Int[1/Log
[c*x], x], x, x^n], x] /; FreeQ[{c, m, n}, x] && EqQ[m, n - 1]
```

Rule 2298

```
Int[Log[(c_.)*(x_)]^(-1), x_Symbol] :> Simp[LogIntegral[c*x]/c, x] /; FreeQ
[c, x]
```

Rubi steps

$$\int \frac{(eg+fgx)^{-1+p}}{\log\left(d(e+fx)^p\right)}\,dx = \frac{\text{Subst}\left(\int \frac{(gx)^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\left((e+fx)^{1-p}(g(e+fx))^{-1+p}\right)\text{Subst}\left(\int \frac{x^{-1+p}}{\log(dx^p)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\left((e+fx)^{1-p}(g(e+fx))^{-1+p}\right)\text{Subst}\left(\int \frac{1}{\log(dx)}\,dx, x, (e+fx)^p\right)}{fp}$$
$$= \frac{(e+fx)^{1-p}(g(e+fx))^{-1+p}\text{li}\left(d(e+fx)^p\right)}{dfp}$$

Mathematica [A] time = 0.0217888, size = 42, normalized size = 1.

$$\frac{(e+fx)^{1-p}(g(e+fx))^{p-1}\text{li}\left(d(e+fx)^p\right)}{dfp}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*g + f*g*x)^(-1 + p)/Log[d*(e + f*x)^p],x]
```

```
[Out] ((e + f*x)^(1 - p)*(g*(e + f*x))^(-1 + p)*LogIntegral[d*(e + f*x)^p])/(d*f*
p)
```

Maple [F] time = 1.007, size = 0, normalized size = 0.

$$\int \frac{\left(fgx+eg\right)^{-1+p}}{\ln\left(d\left(fx+e\right)^p\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*g*x+e*g)^(-1+p)/ln(d*(f*x+e)^p),x)
```

```
[Out] int((f*g*x+e*g)^(-1+p)/ln(d*(f*x+e)^p),x)
```

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

$$\int \frac{\left(fgx+eg\right)^{p-1}}{\log\left(\left(fx+e\right)^p d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="maxima")
```

```
[Out] integrate((f*g*x + e*g)^(p - 1)/log((f*x + e)^p*d), x)
```

Fricas [A] time = 2.08763, size = 63, normalized size = 1.5

$$\frac{g^{p-1}\text{Ei}\left(p\log\left(fx+e\right)+\log\left(d\right)\right)}{dfp}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)^(-1+p)/log(d*(f*x+e)^p),x, algorithm="fricas")
```

```
[Out] g^(p - 1)*Ei(p*log(f*x + e) + log(d))/(d*f*p)
```

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

$$\int \frac{\left(g\left(e+fx\right)\right)^{p-1}}{\log\left(d\left(e+fx\right)^{p}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*g*x+e*g)**(-1+p)/ln(d*(f*x+e)**p),x)
```

```
[Out] Integral((g*(e + f*x))**(p - 1)/log(d*(e + f*x)**p), x)
```

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

$$\int \frac{\left(fgx+eg\right)^{p-1}}{\log\left(\left(fx+e\right)^{p}d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((f*g*x + e*g)^(p - 1)/log((f*x + e)^p*d), x)
```

3.35 $\int (f+gx)^4 (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=178

$$\frac{(f+gx)^5 (a+b\log(c(d+ex)^n))}{5g}-\frac{bnx(ef-dg)^4}{5e^4}-\frac{bn(f+gx)^2(ef-dg)^3}{10e^3g}-\frac{bn(f+gx)^3(ef-dg)^2}{15e^2g}-\frac{bn(ef-dg)^5\log(}{5e^5g}$$

```
[Out] -(b*(e*f - d*g)^4*n*x)/(5*e^4) - (b*(e*f - d*g)^3*n*(f + g*x)^2)/(10*e^3*g)
 - (b*(e*f - d*g)^2*n*(f + g*x)^3)/(15*e^2*g) - (b*(e*f - d*g)*n*(f + g*x)^
4)/(20*e*g) - (b*n*(f + g*x)^5)/(25*g) - (b*(e*f - d*g)^5*n*Log[d + e*x])/(
5*e^5*g) + ((f + g*x)^5*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rubi [A] time = 0.100471, antiderivative size = 178, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 43}

$$\frac{(f+gx)^5 (a+b\log(c(d+ex)^n))}{5g}-\frac{bnx(ef-dg)^4}{5e^4}-\frac{bn(f+gx)^2(ef-dg)^3}{10e^3g}-\frac{bn(f+gx)^3(ef-dg)^2}{15e^2g}-\frac{bn(ef-dg)^5\log(}{5e^5g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^4*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(e*f - d*g)^4*n*x)/(5*e^4) - (b*(e*f - d*g)^3*n*(f + g*x)^2)/(10*e^3*g)
 - (b*(e*f - d*g)^2*n*(f + g*x)^3)/(15*e^2*g) - (b*(e*f - d*g)*n*(f + g*x)^
4)/(20*e*g) - (b*n*(f + g*x)^5)/(25*g) - (b*(e*f - d*g)^5*n*Log[d + e*x])/(
5*e^5*g) + ((f + g*x)^5*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rule 2395

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

Rule 43

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

Rubi steps

$$\begin{aligned}
\int (f+gx)^4 (a+b\log(c(d+ex)^n))\,dx &= \frac{(f+gx)^5 (a+b\log(c(d+ex)^n))}{5g}-\frac{(ben)\int \frac{(f+gx)^5}{d+ex}\,dx}{5g}\\
&= \frac{(f+gx)^5 (a+b\log(c(d+ex)^n))}{5g}-\frac{(ben)\int \left(\frac{g(ef-dg)^4}{e^5}+\frac{(ef-dg)^5}{e^5(d+ex)}+\frac{g(ef-dg)^3(f+gx)}{e^4}\right.}{}\\
&= -\frac{b(ef-dg)^4nx}{5e^4}-\frac{b(ef-dg)^3n(f+gx)^2}{10e^3g}-\frac{b(ef-dg)^2n(f+gx)^3}{15e^2g}-\frac{b(ef-dg)}{20}
\end{aligned}$$

Mathematica [A] time = 0.301256, size = 315, normalized size = 1.77

$$ex\left(60ae^4\left(10f^2g^2x^2+10f^3gx+5f^4+5fg^3x^3+g^4x^4\right)-bn\left(10d^2e^2g^2\left(60f^2+15fgx+2g^2x^2\right)-30d^3eg^3(10f+gx)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^4*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(60*a*e^4*(5*f^4 + 10*f^3*g*x + 10*f^2*g^2*x^2 + 5*f*g^3*x^3 + g^4*x^4
) - b*n*(60*d^4*g^4 - 30*d^3*e*g^3*(10*f + g*x) + 10*d^2*e^2*g^2*(60*f^2 +
15*f*g*x + 2*g^2*x^2) - 5*d*e^3*g*(120*f^3 + 60*f^2*g*x + 20*f*g^2*x^2 + 3*
g^3*x^3) + e^4*(300*f^4 + 300*f^3*g*x + 200*f^2*g^2*x^2 + 75*f*g^3*x^3 + 12
*g^4*x^4))) + 60*b*d^2*g*(-10*e^3*f^3 + 10*d*e^2*f^2*g - 5*d^2*e*f*g^2 + d^
3*g^3)*n*Log[d + e*x] + 60*b*e^4*(5*d*f^4 + e*x*(5*f^4 + 10*f^3*g*x + 10*f^
2*g^2*x^2 + 5*f*g^3*x^3 + g^4*x^4))*Log[c*(d + e*x)^n])/(300*e^5)
```

Maple [C] time = 0.514, size = 1105, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^4*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/5*(g*x+f)^5*b/g*ln((e*x+d)^n)+a*f^4*x-1/25*g^4*b*n*x^5+1/5*g^4*a*x^5+1/5*
g^4*ln(c)*b*x^5+ln(c)*b*f^4*x+g^3*a*f*x^4+2*g^2*a*f^2*x^3+2*g*a*f^3*x^2+2*g
^2*ln(c)*b*f^2*x^3+2*g*ln(c)*b*f^3*x^2+g^3*ln(c)*b*f*x^4-1/5/g*ln(e*x+d)*b*
f^5*n-1/2*I*Pi*b*f^4*x*csgn(I*c*(e*x+d)^n)^3-1/10*I*g^4*Pi*b*x^5*csgn(I*c*(
e*x+d)^n)^3-1/15/e^2*g^4*b*d^2*n*x^3-2/3*g^2*b*f^2*n*x^3+1/10/e^3*g^4*b*d^3
*n*x^2-g*b*f^3*n*x^2-1/5/e^4*g^4*b*d^4*n*x-b*f^4*n*x+1/5/e^5*g^4*ln(e*x+d)*
b*d^5*n+1/e*ln(e*x+d)*b*d*f^4*n+1/20/e*g^4*b*d*n*x^4-1/4*g^3*b*f*n*x^4+I*g^
2*Pi*b*f^2*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*b*f^3*x^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2+I*g^2*Pi*b*f^2*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2+I*g*Pi*b*f^3*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*b*f^
4*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*g^3*Pi*b*f*x^4*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g^3*Pi*b*f*x^4*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2-1/10*I*g^4*Pi*b*x^5*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)-2/e^2*g^2*b*d^2*f^2*n*x+2/e*g*b*d*f^3*n*x+1/3/e*g^3*b*d*f*n*x^3-1/
2/e^2*g^3*b*d^2*f*n*x^2+1/e*g^2*b*d*f^2*n*x^2-1/e^4*g^3*ln(e*x+d)*b*d^4*f*n
+2/e^3*g^2*ln(e*x+d)*b*d^3*f^2*n-2/e^2*g*ln(e*x+d)*b*d^2*f^3*n-I*g^2*Pi*b*f
^2*x^3*csgn(I*c*(e*x+d)^n)^3-I*g*Pi*b*f^3*x^2*csgn(I*c*(e*x+d)^n)^3+1/10*I*
g^4*Pi*b*x^5*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g^3*Pi*b*f*x^4*c
sgn(I*c*(e*x+d)^n)^3+1/10*I*g^4*Pi*b*x^5*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/
2*I*Pi*b*f^4*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*f^4*x*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/e^3*g^3*b*d^3*f*n*x-I*g^2*Pi*b*f^2*x^3*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*g*Pi*b*f^3*x^2*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*g^3*Pi*b*f*x^4*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)
```

Maxima [B] time = 1.21324, size = 531, normalized size = 2.98

$$\frac{1}{5}bg^4x^5\log\left((ex+d)^nc\right)+\frac{1}{5}ag^4x^5+bfg^3x^4\log\left((ex+d)^nc\right)+afg^3x^4+2bf^2g^2x^3\log\left((ex+d)^nc\right)+2af^2g^2x^3-bef$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/5*b*g^4*x^5*log((e*x + d)^n*c) + 1/5*a*g^4*x^5 + b*f*g^3*x^4*log((e*x + d
)^n*c) + a*f*g^3*x^4 + 2*b*f^2*g^2*x^3*log((e*x + d)^n*c) + 2*a*f^2*g^2*x^3
 - b*e*f^4*n*(x/e - d*log(e*x + d)/e^2) + 1/300*b*e*g^4*n*(60*d^5*log(e*x +
 d)/e^6 - (12*e^4*x^5 - 15*d*e^3*x^4 + 20*d^2*e^2*x^3 - 30*d^3*e*x^2 + 60*d
^4*x)/e^5) - 1/12*b*e*f*g^3*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e
^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4) + 1/3*b*e*f^2*g^2*n*(6*d^3*log(e*x +
d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) - b*e*f^3*g*n*(2*d^2*log(e*
x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 2*b*f^3*g*x^2*log((e*x + d)^n*c) + 2*a*
f^3*g*x^2 + b*f^4*x*log((e*x + d)^n*c) + a*f^4*x
```

Fricas [B] time = 2.21632, size = 998, normalized size = 5.61

$$-\frac{12\left(be^5g^4n-5\,ae^5g^4\right)x^5-15\left(20\,ae^5fg^3-\left(5\,be^5fg^3-bde^4g^4\right)n\right)x^4-20\left(30\,ae^5f^2g^2-\left(10\,be^5f^2g^2-5\,bde^4fg^3+bd^2e^3g\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/300*(12*(b*e^5*g^4*n - 5*a*e^5*g^4)*x^5 - 15*(20*a*e^5*f*g^3 - (5*b*e^5*
f*g^3 - b*d*e^4*g^4)*n)*x^4 - 20*(30*a*e^5*f^2*g^2 - (10*b*e^5*f^2*g^2 - 5*
b*d*e^4*f*g^3 + b*d^2*e^3*g^4)*n)*x^3 - 30*(20*a*e^5*f^3*g - (10*b*e^5*f^3*
g - 10*b*d*e^4*f^2*g^2 + 5*b*d^2*e^3*f*g^3 - b*d^3*e^2*g^4)*n)*x^2 - 60*(5*
a*e^5*f^4 - (5*b*e^5*f^4 - 10*b*d*e^4*f^3*g + 10*b*d^2*e^3*f^2*g^2 - 5*b*d^
3*e^2*f*g^3 + b*d^4*e*g^4)*n)*x - 60*(b*e^5*g^4*n*x^5 + 5*b*e^5*f*g^3*n*x^4
 + 10*b*e^5*f^2*g^2*n*x^3 + 10*b*e^5*f^3*g*n*x^2 + 5*b*e^5*f^4*n*x + (5*b*d
*e^4*f^4 - 10*b*d^2*e^3*f^3*g + 10*b*d^3*e^2*f^2*g^2 - 5*b*d^4*e*f*g^3 + b*
d^5*g^4)*n)*log(e*x + d) - 60*(b*e^5*g^4*x^5 + 5*b*e^5*f*g^3*x^4 + 10*b*e^5
*f^2*g^2*x^3 + 10*b*e^5*f^3*g*x^2 + 5*b*e^5*f^4*x)*log(c))/e^5
```

Sympy [A] time = 15.9663, size = 620, normalized size = 3.48

$$\begin{cases} af^4x+2af^3gx^2+2af^2g^2x^3+afg^3x^4+\frac{ag^4x^5}{5}+\frac{bd^5g^4n\log(d+ex)}{5e^5}-\frac{bd^4fg^3n\log(d+ex)}{e^4}-\frac{bd^4g^4nx}{5e^4}+\frac{2bd^3f^2g^2n\log(d+ex)}{e^3}+\frac{bd^3fg^3nx}{e^3} \\ (a+b\log(cd^n))\left(f^4x+2f^3gx^2+2f^2g^2x^3+fg^3x^4+\frac{g^4x^5}{5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**4*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**4*x + 2*a*f**3*g*x**2 + 2*a*f**2*g**2*x**3 + a*f*g**3*x**4
+ a*g**4*x**5/5 + b*d**5*g**4*n*log(d + e*x)/(5*e**5) - b*d**4*f*g**3*n*log
(d + e*x)/e**4 - b*d**4*g**4*n*x/(5*e**4) + 2*b*d**3*f**2*g**2*n*log(d + e*
x)/e**3 + b*d**3*f*g**3*n*x/e**3 + b*d**3*g**4*n*x**2/(10*e**3) - 2*b*d**2*
f**3*g*n*log(d + e*x)/e**2 - 2*b*d**2*f**2*g**2*n*x/e**2 - b*d**2*f*g**3*n*
x**2/(2*e**2) - b*d**2*g**4*n*x**3/(15*e**2) + b*d*f**4*n*log(d + e*x)/e +
2*b*d*f**3*g*n*x/e + b*d*f**2*g**2*n*x**2/e + b*d*f*g**3*n*x**3/(3*e) + b*d
*g**4*n*x**4/(20*e) + b*f**4*n*x*log(d + e*x) - b*f**4*n*x + b*f**4*x*log(c
) + 2*b*f**3*g*n*x**2*log(d + e*x) - b*f**3*g*n*x**2 + 2*b*f**3*g*x**2*log(
c) + 2*b*f**2*g**2*n*x**3*log(d + e*x) - 2*b*f**2*g**2*n*x**3/3 + 2*b*f**2*
```

```
g**2*x**3*log(c) + b*f*g**3*n*x**4*log(d + e*x) - b*f*g**3*n*x**4/4 + b*f*g
**3*x**4*log(c) + b*g**4*n*x**5*log(d + e*x)/5 - b*g**4*n*x**5/25 + b*g**4*
x**5*log(c)/5, Ne(e, 0)), ((a + b*log(c*d**n))*(f**4*x + 2*f**3*g*x**2 + 2*
f**2*g**2*x**3 + f*g**3*x**4 + g**4*x**5/5), True))
```

Giac [B] time = 1.292, size = 1652, normalized size = 9.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/5*(x*e + d)^5*b*g^4*n*e^(-5)*log(x*e + d) - (x*e + d)^4*b*d*g^4*n*e^(-5)*
log(x*e + d) + 2*(x*e + d)^3*b*d^2*g^4*n*e^(-5)*log(x*e + d) - 2*(x*e + d)^
2*b*d^3*g^4*n*e^(-5)*log(x*e + d) + (x*e + d)*b*d^4*g^4*n*e^(-5)*log(x*e +
d) - 1/25*(x*e + d)^5*b*g^4*n*e^(-5) + 1/4*(x*e + d)^4*b*d*g^4*n*e^(-5) - 2
/3*(x*e + d)^3*b*d^2*g^4*n*e^(-5) + (x*e + d)^2*b*d^3*g^4*n*e^(-5) - (x*e +
 d)*b*d^4*g^4*n*e^(-5) + (x*e + d)^4*b*f*g^3*n*e^(-4)*log(x*e + d) - 4*(x*e
 + d)^3*b*d*f*g^3*n*e^(-4)*log(x*e + d) + 6*(x*e + d)^2*b*d^2*f*g^3*n*e^(-4
)*log(x*e + d) - 4*(x*e + d)*b*d^3*f*g^3*n*e^(-4)*log(x*e + d) + 1/5*(x*e +
 d)^5*b*g^4*e^(-5)*log(c) - (x*e + d)^4*b*d*g^4*e^(-5)*log(c) + 2*(x*e + d)
^3*b*d^2*g^4*e^(-5)*log(c) - 2*(x*e + d)^2*b*d^3*g^4*e^(-5)*log(c) + (x*e +
 d)*b*d^4*g^4*e^(-5)*log(c) - 1/4*(x*e + d)^4*b*f*g^3*n*e^(-4) + 4/3*(x*e +
 d)^3*b*d*f*g^3*n*e^(-4) - 3*(x*e + d)^2*b*d^2*f*g^3*n*e^(-4) + 4*(x*e + d)
*b*d^3*f*g^3*n*e^(-4) + 1/5*(x*e + d)^5*a*g^4*e^(-5) - (x*e + d)^4*a*d*g^4*
e^(-5) + 2*(x*e + d)^3*a*d^2*g^4*e^(-5) - 2*(x*e + d)^2*a*d^3*g^4*e^(-5) +
(x*e + d)*a*d^4*g^4*e^(-5) + 2*(x*e + d)^3*b*f^2*g^2*n*e^(-3)*log(x*e + d)
- 6*(x*e + d)^2*b*d*f^2*g^2*n*e^(-3)*log(x*e + d) + 6*(x*e + d)*b*d^2*f^2*g
^2*n*e^(-3)*log(x*e + d) + (x*e + d)^4*b*f*g^3*e^(-4)*log(c) - 4*(x*e + d)^
3*b*d*f*g^3*e^(-4)*log(c) + 6*(x*e + d)^2*b*d^2*f*g^3*e^(-4)*log(c) - 4*(x*
e + d)*b*d^3*f*g^3*e^(-4)*log(c) - 2/3*(x*e + d)^3*b*f^2*g^2*n*e^(-3) + 3*(
x*e + d)^2*b*d*f^2*g^2*n*e^(-3) - 6*(x*e + d)*b*d^2*f^2*g^2*n*e^(-3) + (x*e
 + d)^4*a*f*g^3*e^(-4) - 4*(x*e + d)^3*a*d*f*g^3*e^(-4) + 6*(x*e + d)^2*a*d
^2*f*g^3*e^(-4) - 4*(x*e + d)*a*d^3*f*g^3*e^(-4) + 2*(x*e + d)^2*b*f^3*g*n*
e^(-2)*log(x*e + d) - 4*(x*e + d)*b*d*f^3*g*n*e^(-2)*log(x*e + d) + 2*(x*e
+ d)^3*b*f^2*g^2*e^(-3)*log(c) - 6*(x*e + d)^2*b*d*f^2*g^2*e^(-3)*log(c) +
6*(x*e + d)*b*d^2*f^2*g^2*e^(-3)*log(c) - (x*e + d)^2*b*f^3*g*n*e^(-2) + 4*
(x*e + d)*b*d*f^3*g*n*e^(-2) + 2*(x*e + d)^3*a*f^2*g^2*e^(-3) - 6*(x*e + d)
^2*a*d*f^2*g^2*e^(-3) + 6*(x*e + d)*a*d^2*f^2*g^2*e^(-3) + (x*e + d)*b*f^4*
n*e^(-1)*log(x*e + d) + 2*(x*e + d)^2*b*f^3*g*e^(-2)*log(c) - 4*(x*e + d)*b
*d*f^3*g*e^(-2)*log(c) - (x*e + d)*b*f^4*n*e^(-1) + 2*(x*e + d)^2*a*f^3*g*e
^(-2) - 4*(x*e + d)*a*d*f^3*g*e^(-2) + (x*e + d)*b*f^4*e^(-1)*log(c) + (x*e
 + d)*a*f^4*e^(-1)
```

3.36 $\int (f+gx)^3 (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=149

$$\frac{(f+gx)^4 (a+b\log(c(d+ex)^n))}{4g}-\frac{bnx(ef-dg)^3}{4e^3}-\frac{bn(f+gx)^2(ef-dg)^2}{8e^2g}-\frac{bn(ef-dg)^4\log(d+ex)}{4e^4g}-\frac{bn(f+gx)^3(ef}{12eg}$$

```
[Out] -(b*(e*f - d*g)^3*n*x)/(4*e^3) - (b*(e*f - d*g)^2*n*(f + g*x)^2)/(8*e^2*g)
- (b*(e*f - d*g)*n*(f + g*x)^3)/(12*e*g) - (b*n*(f + g*x)^4)/(16*g) - (b*(e
*f - d*g)^4*n*Log[d + e*x])/(4*e^4*g) + ((f + g*x)^4*(a + b*Log[c*(d + e*x)
^n]))/(4*g)
```

Rubi [A] time = 0.0696452, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 43}

$$\frac{(f+gx)^4 (a+b\log(c(d+ex)^n))}{4g}-\frac{bnx(ef-dg)^3}{4e^3}-\frac{bn(f+gx)^2(ef-dg)^2}{8e^2g}-\frac{bn(ef-dg)^4\log(d+ex)}{4e^4g}-\frac{bn(f+gx)^3(ef}{12eg}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(e*f - d*g)^3*n*x)/(4*e^3) - (b*(e*f - d*g)^2*n*(f + g*x)^2)/(8*e^2*g)
- (b*(e*f - d*g)*n*(f + g*x)^3)/(12*e*g) - (b*n*(f + g*x)^4)/(16*g) - (b*(e
*f - d*g)^4*n*Log[d + e*x])/(4*e^4*g) + ((f + g*x)^4*(a + b*Log[c*(d + e*x)
^n]))/(4*g)
```

Rule 2395

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

Rule 43

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

Rubi steps

$$\begin{aligned}\int (f+gx)^3 (a+b\log(c(d+ex)^n))\,dx &= \frac{(f+gx)^4 (a+b\log(c(d+ex)^n))}{4g}-\frac{(ben)\int \frac{(f+gx)^4}{d+ex}\,dx}{4g}\\ &= \frac{(f+gx)^4 (a+b\log(c(d+ex)^n))}{4g}-\frac{(ben)\int \left(\frac{g(ef-dg)^3}{e^4}+\frac{(ef-dg)^4}{e^4(d+ex)}+\frac{g(ef-dg)^2(f+gx)}{e^3}\right.}{4g}\\ &= -\frac{b(ef-dg)^3nx}{4e^3}-\frac{b(ef-dg)^2n(f+gx)^2}{8e^2g}-\frac{b(ef-dg)n(f+gx)^3}{12eg}-\frac{bn(f+gx)^4}{16g}\end{aligned}$$

Mathematica [A] time = 0.221011, size = 226, normalized size = 1.52

$$\frac{ex\left(12ae^3\left(6f^2gx+4f^3+4fg^2x^2+g^3x^3\right)-bn\left(6d^2eg^2(8f+gx)-12d^3g^3-4de^2g\left(18f^2+6fgx+g^2x^2\right)+e^3\left(36f^2g\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(12*a*e^3*(4*f^3 + 6*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3) - b*n*(-12*d^3*g
^3 + 6*d^2*e*g^2*(8*f + g*x) - 4*d*e^2*g*(18*f^2 + 6*f*g*x + g^2*x^2) + e^3
*(48*f^3 + 36*f^2*g*x + 16*f*g^2*x^2 + 3*g^3*x^3))) - 12*b*d^2*g*(6*e^2*f^2
 - 4*d*e*f*g + d^2*g^2)*n*Log[d + e*x] + 12*b*e^3*(4*d*f^3 + e*x*(4*f^3 + 6
*f^2*g*x + 4*f*g^2*x^2 + g^3*x^3))*Log[c*(d + e*x)^n])/(48*e^4)
```

Maple [C] time = 0.508, size = 836, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] -1/16*g^3*b*n*x^4+g^2*a*f*x^3+3/2*g*a*f^2*x^2+a*f^3*x-1/4/g*ln(e*x+d)*b*f^4
*n+g^2*ln(c)*b*f*x^3+3/2*g*ln(c)*b*f^2*x^2+1/4*g^3*a*x^4+1/2*I*g^2*Pi*b*f*x
^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g^2*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-1/8*I*g^3*Pi*b*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)+3/4*I*g*Pi*b*f^2*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/4*I*g*P
i*b*f^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*b*f^3*x*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*g^3*ln(c)*b*x^4+ln(c)*b*f^3*x
+1/4*(g*x+f)^4*b/g*ln((e*x+d)^n)-3/4*g*b*f^2*n*x^2+1/4/e^3*g^3*b*d^3*n*x-b*
f^3*n*x+1/12/e*g^3*b*d*n*x^3-1/3*g^2*b*f*n*x^3-1/8/e^2*g^3*b*d^2*n*x^2-1/4/
e^4*g^3*ln(e*x+d)*b*d^4*n+1/e*ln(e*x+d)*b*d*f^3*n-1/2*I*Pi*b*f^3*x*csgn(I*c
*(e*x+d)^n)^3-1/8*I*g^3*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3+1/8*I*g^3*Pi*b*x^4*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g^2*Pi*b*f*x^3*csgn(I*c*(e*x+d
)^n)^3-1/2*I*g^2*Pi*b*f*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
-3/4*I*g*Pi*b*f^2*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2/e
*g^2*b*d*f*n*x^2-1/e^2*g^2*b*d^2*f*n*x+3/2/e*g*b*d*f^2*n*x+1/e^3*g^2*ln(e*x
+d)*b*d^3*f*n-3/2/e^2*g*ln(e*x+d)*b*d^2*f^2*n+1/8*I*g^3*Pi*b*x^4*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2-3/4*I*g*Pi*b*f^2*x^2*csgn(I*c*(e*x+d)^n)^3+1/2*I*Pi*b
*f^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*f^3*x*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2
```

Maxima [B] time = 1.20284, size = 383, normalized size = 2.57

$$\frac{1}{4}bg^3x^4\log\left((ex+d)^nc\right)+\frac{1}{4}ag^3x^4+bfg^2x^3\log\left((ex+d)^nc\right)+afg^2x^3-bef^3n\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-\frac{1}{48}beg^3n\left(\frac{12d^4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*b*g^3*x^4*log((e*x + d)^n*c) + 1/4*a*g^3*x^4 + b*f*g^2*x^3*log((e*x + d
)^n*c) + a*f*g^2*x^3 - b*e*f^3*n*(x/e - d*log(e*x + d)/e^2) - 1/48*b*e*g^3*
```

```
n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^
3*x)/e^4) + 1/6*b*e*f*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^
2 + 6*d^2*x)/e^3) - 3/4*b*e*f^2*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + 3/2*b*f^2*g*x^2*log((e*x + d)^n*c) + 3/2*a*f^2*g*x^2 + b*f^3*x*lo
g((e*x + d)^n*c) + a*f^3*x
```

Fricas [B] time = 2.01764, size = 713, normalized size = 4.79

$$-\frac{3\left(be^4g^3n - 4\,ae^4g^3\right)x^4 - 4\left(12\,ae^4fg^2 - \left(4\,be^4fg^2 - bde^3g^3\right)n\right)x^3 - 6\left(12\,ae^4f^2g - \left(6\,be^4f^2g - 4\,bde^3fg^2 + bd^2e^2g^3\right)n\right)x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/48*(3*(b*e^4*g^3*n - 4*a*e^4*g^3)*x^4 - 4*(12*a*e^4*f*g^2 - (4*b*e^4*f*g
^2 - b*d*e^3*g^3)*n)*x^3 - 6*(12*a*e^4*f^2*g - (6*b*e^4*f^2*g - 4*b*d*e^3*f
*g^2 + b*d^2*e^2*g^3)*n)*x^2 - 12*(4*a*e^4*f^3 - (4*b*e^4*f^3 - 6*b*d*e^3*f
^2*g + 4*b*d^2*e^2*f*g^2 - b*d^3*e*g^3)*n)*x - 12*(b*e^4*g^3*n*x^4 + 4*b*e^
4*f*g^2*n*x^3 + 6*b*e^4*f^2*g*n*x^2 + 4*b*e^4*f^3*n*x + (4*b*d*e^3*f^3 - 6*
b*d^2*e^2*f^2*g + 4*b*d^3*e*f*g^2 - b*d^4*g^3)*n)*log(e*x + d) - 12*(b*e^4*
g^3*x^4 + 4*b*e^4*f*g^2*x^3 + 6*b*e^4*f^2*g*x^2 + 4*b*e^4*f^3*x)*log(c))/e^
4
```

Sympy [A] time = 8.4976, size = 450, normalized size = 3.02

$$\begin{cases} af^3x + \frac{3af^2gx^2}{2} + afg^2x^3 + \frac{ag^3x^4}{4} - \frac{bd^4g^3n\log(d+ex)}{4e^4} + \frac{bd^3fg^2n\log(d+ex)}{e^3} + \frac{bd^3g^3nx}{4e^3} - \frac{3bd^2f^2gn\log(d+ex)}{2e^2} - \frac{bd^2fg^2nx}{e^2} - \frac{bd^2g^3nx^2}{8e^2} + \cdots \\ (a + b\log(cd^n))\left(f^3x + \frac{3f^2gx^2}{2} + fg^2x^3 + \frac{g^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**3*x + 3*a*f**2*g*x**2/2 + a*f*g**2*x**3 + a*g**3*x**4/4 - b
*d**4*g**3*n*log(d + e*x)/(4*e**4) + b*d**3*f*g**2*n*log(d + e*x)/e**3 + b*
d**3*g**3*n*x/(4*e**3) - 3*b*d**2*f**2*g*n*log(d + e*x)/(2*e**2) - b*d**2*f
*g**2*n*x/e**2 - b*d**2*g**3*n*x**2/(8*e**2) + b*d*f**3*n*log(d + e*x)/e +
3*b*d*f**2*g*n*x/(2*e) + b*d*f*g**2*n*x**2/(2*e) + b*d*g**3*n*x**3/(12*e) +
 b*f**3*n*x*log(d + e*x) - b*f**3*n*x + b*f**3*x*log(c) + 3*b*f**2*g*n*x**2
*log(d + e*x)/2 - 3*b*f**2*g*n*x**2/4 + 3*b*f**2*g*x**2*log(c)/2 + b*f*g**2
*n*x**3*log(d + e*x) - b*f*g**2*n*x**3/3 + b*f*g**2*x**3*log(c) + b*g**3*n*
x**4*log(d + e*x)/4 - b*g**3*n*x**4/16 + b*g**3*x**4*log(c)/4, Ne(e, 0)), (
(a + b*log(c*d**n))*(f**3*x + 3*f**2*g*x**2/2 + f*g**2*x**3 + g**3*x**4/4),
 True))
```

Giac [B] time = 1.34219, size = 1053, normalized size = 7.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(x*e + d)^4*b*g^3*n*e^(-4)*log(x*e + d) - (x*e + d)^3*b*d*g^3*n*e^(-4)*
log(x*e + d) + 3/2*(x*e + d)^2*b*d^2*g^3*n*e^(-4)*log(x*e + d) - (x*e + d)*
b*d^3*g^3*n*e^(-4)*log(x*e + d) - 1/16*(x*e + d)^4*b*g^3*n*e^(-4) + 1/3*(x*
e + d)^3*b*d*g^3*n*e^(-4) - 3/4*(x*e + d)^2*b*d^2*g^3*n*e^(-4) + (x*e + d)*
b*d^3*g^3*n*e^(-4) + (x*e + d)^3*b*f*g^2*n*e^(-3)*log(x*e + d) - 3*(x*e + d
)^2*b*d*f*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*b*d^2*f*g^2*n*e^(-3)*log(
x*e + d) + 1/4*(x*e + d)^4*b*g^3*e^(-4)*log(c) - (x*e + d)^3*b*d*g^3*e^(-4)
*log(c) + 3/2*(x*e + d)^2*b*d^2*g^3*e^(-4)*log(c) - (x*e + d)*b*d^3*g^3*e^(
-4)*log(c) - 1/3*(x*e + d)^3*b*f*g^2*n*e^(-3) + 3/2*(x*e + d)^2*b*d*f*g^2*n
*e^(-3) - 3*(x*e + d)*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*e + d)^4*a*g^3*e^(-4) -
 (x*e + d)^3*a*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a*d^2*g^3*e^(-4) - (x*e + d)*
a*d^3*g^3*e^(-4) + 3/2*(x*e + d)^2*b*f^2*g*n*e^(-2)*log(x*e + d) - 3*(x*e +
 d)*b*d*f^2*g*n*e^(-2)*log(x*e + d) + (x*e + d)^3*b*f*g^2*e^(-3)*log(c) - 3
*(x*e + d)^2*b*d*f*g^2*e^(-3)*log(c) + 3*(x*e + d)*b*d^2*f*g^2*e^(-3)*log(c
) - 3/4*(x*e + d)^2*b*f^2*g*n*e^(-2) + 3*(x*e + d)*b*d*f^2*g*n*e^(-2) + (x*
e + d)^3*a*f*g^2*e^(-3) - 3*(x*e + d)^2*a*d*f*g^2*e^(-3) + 3*(x*e + d)*a*d^
2*f*g^2*e^(-3) + (x*e + d)*b*f^3*n*e^(-1)*log(x*e + d) + 3/2*(x*e + d)^2*b*
f^2*g*e^(-2)*log(c) - 3*(x*e + d)*b*d*f^2*g*e^(-2)*log(c) - (x*e + d)*b*f^3
*n*e^(-1) + 3/2*(x*e + d)^2*a*f^2*g*e^(-2) - 3*(x*e + d)*a*d*f^2*g*e^(-2) +
 (x*e + d)*b*f^3*e^(-1)*log(c) + (x*e + d)*a*f^3*e^(-1)
```

3.37 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right) \, dx$

Optimal. Leaf size=120

$$\frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{bnx(ef-dg)^2}{3e^2}-\frac{bn(ef-dg)^3\log(d+ex)}{3e^3g}-\frac{bn(f+gx)^2(ef-dg)}{6eg}-\frac{bn(f+gx)^3}{9g}$$

```
[Out] -(b*(e*f - d*g)^2*n*x)/(3*e^2) - (b*(e*f - d*g)*n*(f + g*x)^2)/(6*e*g) - (b
*n*(f + g*x)^3)/(9*g) - (b*(e*f - d*g)^3*n*Log[d + e*x])/(3*e^3*g) + ((f +
g*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rubi [A] time = 0.0544044, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 43}

$$\frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{bnx(ef-dg)^2}{3e^2}-\frac{bn(ef-dg)^3\log(d+ex)}{3e^3g}-\frac{bn(f+gx)^2(ef-dg)}{6eg}-\frac{bn(f+gx)^3}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(e*f - d*g)^2*n*x)/(3*e^2) - (b*(e*f - d*g)*n*(f + g*x)^2)/(6*e*g) - (b
*n*(f + g*x)^3)/(9*g) - (b*(e*f - d*g)^3*n*Log[d + e*x])/(3*e^3*g) + ((f +
g*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rule 2395

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

Rule 43

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

Rubi steps

$$\begin{aligned}\int (f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)dx &= \frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{(ben)\int \frac{(f+gx)^3}{d+ex}\,dx}{3g}\\ &= \frac{(f+gx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g}-\frac{(ben)\int\left(\frac{g(ef-dg)^2}{e^3}+\frac{(ef-dg)^3}{e^3(d+ex)}+\frac{g(ef-dg)(f+gx)}{e^2}+\right.}{3g}\\ &= -\frac{b(ef-dg)^2nx}{3e^2}-\frac{b(ef-dg)n(f+gx)^2}{6eg}-\frac{bn(f+gx)^3}{9g}-\frac{b(ef-dg)^3n\log(d+}{3e^3g}\end{aligned}$$

Mathematica [A] time = 0.142426, size = 150, normalized size = 1.25

$$\frac{e\left(x\left(6ae^2\left(3f^2+3fgx+g^2x^2\right)-bn\left(6d^2g^2-3deg(6f+gx)+e^2\left(18f^2+9fgx+2g^2x^2\right)\right)\right)+6be\left(3df^2+ex\left(3f^2+3fgx\right.\right.\right.}{18e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*b*d^2*g*(-3*e*f + d*g)*n*Log[d + e*x] + e*(x*(6*a*e^2*(3*f^2 + 3*f*g*x +
 g^2*x^2) - b*n*(6*d^2*g^2 - 3*d*e*g*(6*f + g*x) + e^2*(18*f^2 + 9*f*g*x +
2*g^2*x^2))) + 6*b*e*(3*d*f^2 + e*x*(3*f^2 + 3*f*g*x + g^2*x^2))*Log[c*(d +
 e*x)^n]))/(18*e^3)
```

Maple [C] time = 0.508, size = 585, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] -1/2*g*b*f*n*x^2-1/3/e^2*g^2*b*d^2*n*x-b*f^2*n*x+1/3/e^3*g^2*ln(e*x+d)*b*d^
3*n+1/3*(g*x+f)^3*b/g*ln((e*x+d)^n)-1/9*g^2*b*n*x^3+g*a*f*x^2+a*f^2*x-1/3/g
*ln(e*x+d)*b*f^3*n+g*ln(c)*b*f*x^2+1/3*g^2*a*x^3+ln(c)*b*f^2*x+1/3*g^2*ln(c
)*b*x^3+1/e*ln(e*x+d)*b*d*f^2*n-1/2*I*Pi*b*f^2*x*csgn(I*c*(e*x+d)^n)^3-1/6*
I*g^2*Pi*b*x^3*csgn(I*c*(e*x+d)^n)^3+1/6/e*g^2*b*d*n*x^2-1/6*I*g^2*Pi*b*x^3
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*g*Pi*b*f*x^2*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2-1/2*I*Pi*b*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1
/e*g*b*d*f*n*x-1/e^2*g*ln(e*x+d)*b*d^2*f*n+1/6*I*g^2*Pi*b*x^3*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-1/2*I*g*Pi*b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)+1/6*I*g^2*Pi*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I
*g*Pi*b*f*x^2*csgn(I*c*(e*x+d)^n)^3+1/2*I*Pi*b*f^2*x*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2+1/2*I*Pi*b*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
```

Maxima [A] time = 1.26443, size = 252, normalized size = 2.1

$$\frac{1}{3}\,bg^2x^3\log\left((ex+d)^nc\right)+\frac{1}{3}\,ag^2x^3-bef^2n\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)+\frac{1}{18}\,beg^2n\left(\frac{6\,d^3\log\left(ex+d\right)}{e^4}-\frac{2\,e^2x^3-3\,dex^2+6\,d^2}{e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*b*g^2*x^3*log((e*x + d)^n*c) + 1/3*a*g^2*x^3 - b*e*f^2*n*(x/e - d*log(e
*x + d)/e^2) + 1/18*b*e*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*
x^2 + 6*d^2*x)/e^3) - 1/2*b*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + b*f*g*x^2*log((e*x + d)^n*c) + a*f*g*x^2 + b*f^2*x*log((e*x + d)^
n*c) + a*f^2*x
```

Fricas [B] time = 2.16382, size = 474, normalized size = 3.95

$$-\frac{2\left(be^3g^2n-3\,ae^3g^2\right)x^3-3\left(6\,ae^3fg-\left(3\,be^3fg-bde^2g^2\right)n\right)x^2-6\left(3\,ae^3f^2-\left(3\,be^3f^2-3\,bde^2fg+bd^2eg^2\right)n\right)x-6\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/18*(2*(b*e^3*g^2*n - 3*a*e^3*g^2)*x^3 - 3*(6*a*e^3*f*g - (3*b*e^3*f*g -
b*d*e^2*g^2)*n)*x^2 - 6*(3*a*e^3*f^2 - (3*b*e^3*f^2 - 3*b*d*e^2*f*g + b*d^2
*e*g^2)*n)*x - 6*(b*e^3*g^2*n*x^3 + 3*b*e^3*f*g*n*x^2 + 3*b*e^3*f^2*n*x + (
3*b*d*e^2*f^2 - 3*b*d^2*e*f*g + b*d^3*g^2)*n)*log(e*x + d) - 6*(b*e^3*g^2*x
^3 + 3*b*e^3*f*g*x^2 + 3*b*e^3*f^2*x)*log(c))/e^3
```

Sympy [A] time = 3.95086, size = 277, normalized size = 2.31

$$\begin{cases} af^2x + afgx^2 + \frac{ag^2x^3}{3} + \frac{bd^3g^2n\log(d+ex)}{3e^3} - \frac{bd^2fgn\log(d+ex)}{e^2} - \frac{bd^2g^2nx}{3e^2} + \frac{bdf^2n\log(d+ex)}{e} + \frac{bdfgnx}{e} + \frac{bdg^2nx^2}{6e} + bf^2nx\log(d+ex \\ (a + b\log(cd^n))\left(f^2x + fgx^2 + \frac{g^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**2*x + a*f*g*x**2 + a*g**2*x**3/3 + b*d**3*g**2*n*log(d + e*
x)/(3*e**3) - b*d**2*f*g*n*log(d + e*x)/e**2 - b*d**2*g**2*n*x/(3*e**2) + b
*d*f**2*n*log(d + e*x)/e + b*d*f*g*n*x/e + b*d*g**2*n*x**2/(6*e) + b*f**2*n
*x*log(d + e*x) - b*f**2*n*x + b*f**2*x*log(c) + b*f*g*n*x**2*log(d + e*x)
- b*f*g*n*x**2/2 + b*f*g*x**2*log(c) + b*g**2*n*x**3*log(d + e*x)/3 - b*g**
2*n*x**3/9 + b*g**2*x**3*log(c)/3, Ne(e, 0)), ((a + b*log(c*d**n))*(f**2*x
+ f*g*x**2 + g**2*x**3/3), True))
```

Giac [B] time = 1.21388, size = 581, normalized size = 4.84

$$\frac{1}{3}(xe+d)^3bg^2ne^{(-3)}\log(xe+d) - (xe+d)^2bdg^2ne^{(-3)}\log(xe+d) + (xe+d)bd^2g^2ne^{(-3)}\log(xe+d) - \frac{1}{9}(xe+d)^3bg^2ne^{(-$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(x*e + d)^3*b*g^2*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*g^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b*d^2*g^2*n*e^(-3)*log(x*e + d) - 1/9*(x*e + d)^3*
b*g^2*n*e^(-3) + 1/2*(x*e + d)^2*b*d*g^2*n*e^(-3) - (x*e + d)*b*d^2*g^2*n*e
^(-3) + (x*e + d)^2*b*f*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*b*d*f*g*n*e^(
-2)*log(x*e + d) + 1/3*(x*e + d)^3*b*g^2*e^(-3)*log(c) - (x*e + d)^2*b*d*g^
2*e^(-3)*log(c) + (x*e + d)*b*d^2*g^2*e^(-3)*log(c) - 1/2*(x*e + d)^2*b*f*g
*n*e^(-2) + 2*(x*e + d)*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a*g^2*e^(-3) - (
x*e + d)^2*a*d*g^2*e^(-3) + (x*e + d)*a*d^2*g^2*e^(-3) + (x*e + d)*b*f^2*n*
e^(-1)*log(x*e + d) + (x*e + d)^2*b*f*g*e^(-2)*log(c) - 2*(x*e + d)*b*d*f*g
*e^(-2)*log(c) - (x*e + d)*b*f^2*n*e^(-1) + (x*e + d)^2*a*f*g*e^(-2) - 2*(x
*e + d)*a*d*f*g*e^(-2) + (x*e + d)*b*f^2*e^(-1)*log(c) + (x*e + d)*a*f^2*e^
(-1)
```

3.38 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=91

$$\frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{bn(ef-dg)^2\log(d+ex)}{2e^2g}-\frac{bnx(ef-dg)}{2e}-\frac{bn(f+gx)^2}{4g}$$

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

Rubi [A] time = 0.036921, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1, Rules used = {2395, 43}

$$\frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{bn(ef-dg)^2\log(d+ex)}{2e^2g}-\frac{bnx(ef-dg)}{2e}-\frac{bn(f+gx)^2}{4g}$$

Antiderivative was successfully verified.

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

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

Rule 2395

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

Rule 43

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

Rubi steps

$$\begin{aligned}\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx &= \frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{(ben)\int\frac{(f+gx)^2}{d+ex}\,dx}{2g}\\ &= \frac{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{(ben)\int\left(\frac{g(ef-dg)}{e^2}+\frac{(ef-dg)^2}{e^2(d+ex)}+\frac{g(f+gx)}{e}\right)dx}{2g}\\ &= -\frac{b(ef-dg)nx}{2e}-\frac{bn(f+gx)^2}{4g}-\frac{b(ef-dg)^2n\log(d+ex)}{2e^2g}+\frac{(f+gx)^2\left(a+b\,\mathrm{l}\right.}{2g}\end{aligned}$$

Mathematica [A] time = 0.0513523, size = 101, normalized size = 1.11

$$afx+\frac{1}{2}agx^2+\frac{bf(d+ex)\log\left(c(d+ex)^n\right)}{e}+\frac{1}{2}bgx^2\log\left(c(d+ex)^n\right)-\frac{bd^2gn\log(d+ex)}{2e^2}+\frac{bdgnx}{2e}-bfnx-\frac{1}{4}bgnx^2$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.078, size = 101, normalized size = 1.1

$$afx + \frac{ax^2g}{2} + bf\ln\left(c\,(ex+d)^n\right)x - bfnx + \frac{bdfn\ln(ex+d)}{e} + \frac{bgx^2\ln\left(c\mathrm{e}^{n\ln(ex+d)}\right)}{2} - \frac{nbgx^2}{4} - \frac{d^2nbg\ln(ex+d)}{2e^2} + \frac{dnb}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.12429, size = 138, normalized size = 1.52

$$-befn\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) - \frac{1}{4}begn\left(\frac{2d^2\log(ex+d)}{e^3} + \frac{ex^2 - 2dx}{e^2}\right) + \frac{1}{2}bgx^2\log\left((ex+d)^nc\right) + \frac{1}{2}agx^2 + bfx\log\left((ex+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 1.9746, size = 267, normalized size = 2.93

$$-\frac{\left(be^2gn - 2\,ae^2g\right)x^2 - 2\left(2\,ae^2f - \left(2\,be^2f - bdeg\right)n\right)x - 2\left(be^2gnx^2 + 2\,be^2fnx + \left(2\,bdef - bd^2g\right)n\right)\log(ex+d) - 2\left(be^2g\right.}{4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 1.76341, size = 148, normalized size = 1.63

$$\begin{cases} afx + \frac{agx^2}{2} - \frac{bd^2gn\log(d+ex)}{2e^2} + \frac{bdfn\log(d+ex)}{e} + \frac{bdgnx}{2e} + bfnx\log(d+ex) - bfnx + bfx\log(c) + \frac{bgnx^2\log(d+ex)}{2} - \frac{bgnx^2}{4} + \\ (a + b\log(cd^n))\left(fx + \frac{gx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*f*x + a*g*x**2/2 - b*d**2*g*n*log(d + e*x)/(2*e**2) + b*d*f*n*
log(d + e*x)/e + b*d*g*n*x/(2*e) + b*f*n*x*log(d + e*x) - b*f*n*x + b*f*x*l
og(c) + b*g*n*x**2*log(d + e*x)/2 - b*g*n*x**2/4 + b*g*x**2*log(c)/2, Ne(e,
 0)), ((a + b*log(c*d**n))*(f*x + g*x**2/2), True))
```

Giac [B] time = 1.28703, size = 251, normalized size = 2.76

$$\frac{1}{2}(xe+d)^2bgne^{(-2)}\log(xe+d) - (xe+d)bdgne^{(-2)}\log(xe+d) - \frac{1}{4}(xe+d)^2bgne^{(-2)} + (xe+d)bdgne^{(-2)} + (xe+d)bf$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.39 $\int (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=29

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

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

Rubi [A] time = 0.0158583, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2389, 2295}

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0075962, size = 29, normalized size = 1.

$$ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.061, size = 36, normalized size = 1.2

$$ax + b\ln\left(c\left(ex+d\right)^{n}\right)x - bnx + \frac{\ln\left(ex+d\right)bdn}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.11399, size = 54, normalized size = 1.86

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.15658, size = 93, normalized size = 3.21

$$\frac{bex\log\left(c\right) - (ben - ae)x + (benx + bdn)\log\left(ex+d\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.546044, size = 42, normalized size = 1.45

$$ax + b\left(\begin{cases} \frac{dn\log\left(d+ex\right)}{e} + nx\log\left(d+ex\right) - nx + x\log\left(c\right) & \text{for}\: e \neq 0 \\ x\log\left(cd^{n}\right) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(e*x+d)**n),x)
```

```
[Out] a*x + b*Piecewise((d*n*log(d + e*x)/e + n*x*log(d + e*x) - n*x + x*log(c),
Ne(e, 0)), (x*log(c*d**n), True))
```

Giac [A] time = 1.22442, size = 62, normalized size = 2.14

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*lo
g(c))*b + a*x
```

3.40 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

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

Rubi [A] time = 0.0521351, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2394

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

Rule 2393

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

Rule 2391

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

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(ben)\int\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(bn)\,\mathrm{Subst}\left(\int\frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}\,dx, x, d+ex\right)}{g}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

Mathematica [A] time = 0.0138876, size = 62, normalized size = 0.98

$$\frac{bn\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)}{g} + \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.625, size = 261, normalized size = 4.1

$$\frac{b\ln\left(gx+f\right)\ln\left((ex+d)^n\right)}{g} - \frac{bn}{g}\mathrm{dilog}\left(\frac{\left(gx+f\right)e+dg-fe}{dg-fe}\right) - \frac{bn\ln\left(gx+f\right)}{g}\ln\left(\frac{\left(gx+f\right)e+dg-fe}{dg-fe}\right) - \frac{i}{2}\ln\left(gx+f\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

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

$$b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{gx+f}\,dx + \frac{a\log\left(gx+f\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

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

$$\int \frac{a+b\log\left(c\left(d+ex\right)^n\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.41 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx$

Optimal. Leaf size=74

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

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

Rubi [A] time = 0.0316396, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2395, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2395

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

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

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^2}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)}\,dx}{g}\\ &= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{(ben)\int \frac{1}{f+gx}\,dx}{ef-dg}+\frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{g(ef-dg)}\\ &= \frac{ben\log(d+ex)}{g(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{ben\log(f+gx)}{g(ef-dg)}\end{aligned}$$

Mathematica [A] time = 0.0699393, size = 57, normalized size = 0.77

$$\frac{\frac{ben(\log(d+ex)-\log(f+gx))}{ef-dg}-\frac{a+b\log(c(d+ex)^n)}{f+gx}}{g}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.313, size = 354, normalized size = 4.8

$$-\frac{b\ln\left((ex+d)^n\right)}{\left(gx+f\right)g}-\frac{i\pi\,bef\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^n\right)\operatorname{csgn}\left(ic(ex+d)^n\right)-i\pi\,bdg\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^n\right)\operatorname{csgn}\left(ic(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -b/g/(g*x+f)*ln((e*x+d)^n)-1/2*(I*Pi*b*e*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)-I*Pi*b*d*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-
I*Pi*b*d*g*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
+I*Pi*b*e*f*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-I*Pi*b*e*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*f*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2+2*ln(e*x+d)*b*e*g*n*x-2*ln(-g*x-f)*b*e*g*n*x+2
*ln(e*x+d)*b*e*f*n-2*ln(-g*x-f)*b*e*f*n+2*ln(c)*b*d*g-2*ln(c)*b*e*f+2*a*d*g
-2*a*e*f)/(g*x+f)/g/(d*g-e*f)
```

Maxima [A] time = 1.21186, size = 115, normalized size = 1.55

$$ben\left(\frac{\log(ex+d)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-\frac{b\log\left((ex+d)^n c\right)}{g^2x+fg}-\frac{a}{g^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 2.46686, size = 215, normalized size = 2.91

$$-\frac{aef-adg-\left(begnx+bdgn\right)\log(ex+d)+\left(begnx+befn\right)\log\left(gx+f\right)+\left(bef-bdg\right)\log(c)}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

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

Giac [A] time = 1.25078, size = 150, normalized size = 2.03

$$\frac{bgnxe\log\left(gx+f\right)-bgnxe\log\left(xe+d\right)+bfne\log\left(gx+f\right)-bdgn\log\left(xe+d\right)-bdg\log\left(c\right)+bfe\log\left(c\right)-adg+afe}{dg^3x-fg^2xe+dfg^2-f^2ge}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.42 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^3}\,dx$

Optimal. Leaf size=112

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}+\frac{ben}{2g(f+gx)(ef-dg)}$$

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

Rubi [A] time = 0.0622702, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 44}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}+\frac{ben}{2g(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2395

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

Rule 44

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

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^3}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)^2}\,dx}{2g}\\
&= -\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}+\frac{(ben)\int \left(\frac{e^2}{(ef-dg)^2(d+ex)}-\frac{g}{(ef-dg)(f+gx)^2}-\frac{eg}{(ef-dg)^2(f+gx)}\right)dx}{2g}\\
&= \frac{ben}{2g(ef-dg)(f+gx)}+\frac{be^2n\log(d+ex)}{2g(ef-dg)^2}-\frac{a+b\log\left(c(d+ex)^n\right)}{2g(f+gx)^2}-\frac{be^2n\log(f+gx)}{2g(ef-dg)^2}
\end{aligned}$$

Mathematica [A] time = 0.103032, size = 83, normalized size = 0.74

$$-\frac{a+b\log\left(c(d+ex)^n\right)-\frac{ben(f+gx)(e(f+gx)\log(d+ex)-dg-e(f+gx)\log(f+gx)+ef)}{(ef-dg)^2}}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.374, size = 633, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.1057, size = 225, normalized size = 2.01

$$\frac{1}{2}\,ben\left(\frac{e\log\left(ex+d\right)}{e^2f^2g-2\,defg^2+d^2g^3}-\frac{e\log\left(gx+f\right)}{e^2f^2g-2\,defg^2+d^2g^3}+\frac{1}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}\right)-\frac{b\log\left((ex+d)^nc\right)}{2\left(g^3x^2+2\,fg^2x+f^2g\right)}-\,\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] time = 2.54747, size = 579, normalized size = 5.17

$$-\frac{ae^2f^2 - 2\,adefg + ad^2g^2 - \left(be^2fg - bdeg^2\right)nx - \left(be^2f^2 - bdefg\right)n - \left(be^2g^2nx^2 + 2\,be^2fgnx + \left(2\,bdefg - bd^2g^2\right)n\right)\mathrm{l}}{2\left(e^2f^4g - 2\,def^3g^2 + d^2f^2g^3 + \left(e^2f^2g^3 - 2\,defg^4 + d^2g^5\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Giac [B] time = 1.22982, size = 408, normalized size = 3.64

$$-\frac{bg^2nx^2e^2\log\left(gx+f\right) - bg^2nx^2e^2\log\left(xe+d\right) + bdg^2nxe + 2\,bfgnxe^2\log\left(gx+f\right) + bd^2g^2n\log\left(xe+d\right) - 2\,bfgnxe}{2\left(d^2g^5x^2 - 2\,dfg^4x^2e + 2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.43 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^4}\,dx$

Optimal. Leaf size=141

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{be^2n}{3g(f+gx)(ef-dg)^2}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{be^3n\log(f+gx)}{3g(ef-dg)^3}+\frac{ben}{6g(f+gx)^2(ef-dg)}$$

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

Rubi [A] time = 0.0821917, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 44}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{be^2n}{3g(f+gx)(ef-dg)^2}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{be^3n\log(f+gx)}{3g(ef-dg)^3}+\frac{ben}{6g(f+gx)^2(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2395

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

Rule 44

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

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^4}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)^3}\,dx}{3g}\\ &= -\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}+\frac{(ben)\int \left(\frac{e^3}{(ef-dg)^3(d+ex)}-\frac{g}{(ef-dg)(f+gx)^3}-\frac{eg}{(ef-dg)^2(f+gx)^2}-\frac{e^2g}{(ef-dg)^3(f+\right.}{3g}\\ &= \frac{ben}{6g(ef-dg)(f+gx)^2}+\frac{be^2n}{3g(ef-dg)^2(f+gx)}+\frac{be^3n\log(d+ex)}{3g(ef-dg)^3}-\frac{a+b\log\left(c(d+ex)^n\right)}{3g(f+gx)^3}\end{aligned}$$

Mathematica [A] time = 0.147297, size = 110, normalized size = 0.78

$$\frac{\frac{ben(f+gx)\left(2e^2(f+gx)^2\log(d+ex)+(ef-dg)(-dg+3ef+2egx)-2e^2(f+gx)^2\log(f+gx)\right)}{(ef-dg)^3}-2\left(a+b\log\left(c(d+ex)^n\right)\right)}{6g(f+gx)^3}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.386, size = 950, normalized size = 6.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*b/g/(g*x+f)^3*ln((e*x+d)^n)+1/6*(-3*b*e^3*f^3*n-2*ln(e*x+d)*b*e^3*f^3*
n+2*ln(-g*x-f)*b*e^3*f^3*n-3*I*Pi*b*d^2*e*f*g^2*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)-2*ln(c)*b*d^3*g^3+2*ln(c)*b*e^3*f^3-b*d^2*e*f*n*g^2+4*
b*d*e^2*f^2*n*g+2*b*d*e^2*g^3*n*x^2-2*b*e^3*f*g^2*n*x^2-b*d^2*e*g^3*n*x-5*b
*e^3*f^2*g*n*x-2*a*d^3*g^3-3*I*Pi*b*d^2*e*f*g^2*csgn(I*c*(e*x+d)^n)^3+3*I*P
i*b*d*e^2*f^2*g*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d^3*g^3*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)+2*a*e^3*f^3+6*b*d*e^2*f*g^2*n*x-I*Pi*b*e^3*f^3*cs
gn(I*c*(e*x+d)^n)^3-I*Pi*b*e^3*f^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+3*I*Pi*b*d^2*e*f*g^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*d^2*e
*f*g^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+6*a*d^2*e*f*g^2+2*ln(-g*x-f)
*b*e^3*g^3*n*x^3-2*ln(e*x+d)*b*e^3*g^3*n*x^3+6*ln(c)*b*d^2*e*f*g^2-6*ln(c)*
b*d*e^2*f^2*g-I*Pi*b*d^3*g^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*d^3*g^3
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^3*f^3*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2-6*a*d*e^2*f^2*g-3*I*Pi*b*d*e^2*f^2*g*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2-3*I*Pi*b*d*e^2*f^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*
b*d*e^2*f^2*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e^3*f^
3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d^3*g^3*csgn(I*c*(e*x+d)^n
)^3+6*ln(-g*x-f)*b*e^3*f*g^2*n*x^2-6*ln(e*x+d)*b*e^3*f*g^2*n*x^2+6*ln(-g*x-
f)*b*e^3*f^2*g*n*x-6*ln(e*x+d)*b*e^3*f^2*g*n*x)/(g*x+f)^3/(d^2*g^2-2*d*e*f*
g+e^2*f^2)/(d*g-e*f)/g
```

Maxima [B] time = 1.19411, size = 406, normalized size = 2.88

$$\frac{1}{6}\left(\frac{2\,e^2\log\left(ex+d\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}-\frac{2\,e^2\log\left(gx+f\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}+\frac{}{e^2f^4g-2\,def^3g^2+d^2f^2g^3+\left(e^2f^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="maxima")
```

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

```
3*g^4) + (2*e*g*x + 3*e*f - d*g)/(e^2*f^4*g - 2*d*e*f^3*g^2 + d^2*f^2*g^3 +
 (e^2*f^2*g^3 - 2*d*e*f*g^4 + d^2*g^5)*x^2 + 2*(e^2*f^3*g^2 - 2*d*e*f^2*g^3
 + d^2*f*g^4)*x))*b*e*n - 1/3*b*log((e*x + d)^n*c)/(g^4*x^3 + 3*f*g^3*x^2 +
 3*f^2*g^2*x + f^3*g) - 1/3*a/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*g)
```

Fricas [B] time = 2.37471, size = 1041, normalized size = 7.38

$$-\frac{2\,ae^3f^3 - 6\,ade^2f^2g + 6\,ad^2efg^2 - 2\,ad^3g^3 - 2\left(be^3fg^2 - bde^2g^3\right)nx^2 - \left(5\,be^3f^2g - 6\,bde^2fg^2 + bd^2eg^3\right)nx - \left(3\,be^3f^3 - \right.}{6\left(e^3f^6g - 3\,de^2f^5g^2 + 3\,d^2ef^4g^3 - \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="fricas")
```

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Giac [B] time = 1.27562, size = 763, normalized size = 5.41

$$\frac{2\,bg^3nx^3e^3\log\left(gx+f\right) - 2\,bg^3nx^3e^3\log\left(xe+d\right) + 2\,bdg^3nx^2e^2 - bd^2g^3nxe + 6\,bfg^2nx^2e^3\log\left(gx+f\right) - 2\,bd^3g^3n\log\left(x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^4,x, algorithm="giac")
```

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

```
2*a*d^3*g^3 - 5*b*f^2*g*n*x*e^3 + 4*b*d*f^2*g*n*e^2 + 6*a*d^2*f*g^2*e + 2*b
*f^3*n*e^3*log(g*x + f) - 6*b*d*f^2*g*e^2*log(c) - 3*b*f^3*n*e^3 - 6*a*d*f^
2*g*e^2 + 2*b*f^3*e^3*log(c) + 2*a*f^3*e^3)/(d^3*g^7*x^3 - 3*d^2*f*g^6*x^3*
e + 3*d^3*f*g^6*x^2 + 3*d*f^2*g^5*x^3*e^2 - 9*d^2*f^2*g^5*x^2*e + 3*d^3*f^2
*g^5*x - f^3*g^4*x^3*e^3 + 9*d*f^3*g^4*x^2*e^2 - 9*d^2*f^3*g^4*x*e + d^3*f^
3*g^4 - 3*f^4*g^3*x^2*e^3 + 9*d*f^4*g^3*x*e^2 - 3*d^2*f^4*g^3*e - 3*f^5*g^2
*x*e^3 + 3*d*f^5*g^2*e^2 - f^6*g*e^3)
```

3.44 $\int (f+gx)^3 (a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=365

$$-\frac{2bg^2n(d+ex)^3(ef-dg)(a+b\log(c(d+ex)^n))}{3e^4}-\frac{bn(ef-dg)^4\log(d+ex)(a+b\log(c(d+ex)^n))}{2e^4g}-\frac{2bn(d+ex)(ef-c}{}$$

```
[Out] (2*b^2*(e*f - d*g)^3*n^2*x)/e^3 + (3*b^2*g*(e*f - d*g)^2*n^2*(d + e*x)^2)/(
4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*(d + e*x)^3)/(9*e^4) + (b^2*g^3*n^2*(d
+ e*x)^4)/(32*e^4) + (b^2*(e*f - d*g)^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (2*
b*(e*f - d*g)^3*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/e^4 - (3*b*g*(e*f -
 d*g)^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^4) - (2*b*g^2*(e*f -
 d*g)*n*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4) - (b*g^3*n*(d + e*x
)^4*(a + b*Log[c*(d + e*x)^n]))/(8*e^4) - (b*(e*f - d*g)^4*n*Log[d + e*x]*(
a + b*Log[c*(d + e*x)^n]))/(2*e^4*g) + ((f + g*x)^4*(a + b*Log[c*(d + e*x)^
n])^2)/(4*g)
```

Rubi [A] time = 0.535377, antiderivative size = 301, normalized size of antiderivative = 0.82, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2398, 2411, 43, 2334, 12, 2301}

$$-\frac{bn\left(\frac{36g^2(d+ex)^2(ef-dg)^2}{e^4}+\frac{16g^3(d+ex)^3(ef-dg)}{e^4}+\frac{48g(d+ex)(ef-dg)^3}{e^4}+\frac{12(ef-dg)^4\log(d+ex)}{e^4}+\frac{3g^4(d+ex)^4}{e^4}\right)(a+b\log(c(d+ex)^n))}{24g}+\frac{(f-}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*b^2*(e*f - d*g)^3*n^2*x)/e^3 + (3*b^2*g*(e*f - d*g)^2*n^2*(d + e*x)^2)/(
4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*(d + e*x)^3)/(9*e^4) + (b^2*g^3*n^2*(d
+ e*x)^4)/(32*e^4) + (b^2*(e*f - d*g)^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (b*
n*((48*g*(e*f - d*g)^3*(d + e*x))/e^4 + (36*g^2*(e*f - d*g)^2*(d + e*x)^2)/
e^4 + (16*g^3*(e*f - d*g)*(d + e*x)^3)/e^4 + (3*g^4*(d + e*x)^4)/e^4 + (12*
(e*f - d*g)^4*Log[d + e*x])/e^4)*(a + b*Log[c*(d + e*x)^n]))/(24*g) + ((f +
 g*x)^4*(a + b*Log[c*(d + e*x)^n])^2)/(4*g)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

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

Rule 2301

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

Rubi steps

$$\int (f+gx)^3 (a+b\log(c(d+ex)^n))^2\,dx = \frac{(f+gx)^4(a+b\log(c(d+ex)^n))^2}{4g} - \frac{(ben)\int \frac{(f+gx)^4(a+b\log(c(d+ex)^n))}{d+ex}\,dx}{2g}$$

$$= \frac{(f+gx)^4(a+b\log(c(d+ex)^n))^2}{4g} - \frac{(bn)\,\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^4(a+b\log(cx^n))}{x}\,dx\right.}{2g}$$

$$= -\frac{bn\left(\frac{48g(ef-dg)^3(d+ex)}{e^4}+\frac{36g^2(ef-dg)^2(d+ex)^2}{e^4}+\frac{16g^3(ef-dg)(d+ex)^3}{e^4}+\frac{3g^4(d+ex)^4}{e^4}+12\right.}{24g}$$

$$= -\frac{bn\left(\frac{48g(ef-dg)^3(d+ex)}{e^4}+\frac{36g^2(ef-dg)^2(d+ex)^2}{e^4}+\frac{16g^3(ef-dg)(d+ex)^3}{e^4}+\frac{3g^4(d+ex)^4}{e^4}+12\right.}{24g}$$

$$= \frac{2b^2(ef-dg)^3n^2x}{e^3}+\frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4}+\frac{2b^2g^2(ef-dg)n^2(d+ex)}{9e^4}$$

$$= \frac{2b^2(ef-dg)^3n^2x}{e^3}+\frac{3b^2g(ef-dg)^2n^2(d+ex)^2}{4e^4}+\frac{2b^2g^2(ef-dg)n^2(d+ex)}{9e^4}$$

Mathematica [A] time = 0.250792, size = 360, normalized size = 0.99

$$64bg^2n(ef-dg)\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3(a+b\log(c(d+ex)^n))\right)+9bg^3n\left(benx\left(6d^2ex+4d^3+4de^2x^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (288*(e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 432*g*(e*f - d*
g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + 288*g^2*(e*f - d*g)*(d + e*
x)^3*(a + b*Log[c*(d + e*x)^n])^2 + 72*g^3*(d + e*x)^4*(a + b*Log[c*(d + e*
x)^n])^2 - 576*b*(e*f - d*g)^3*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c*(d + e*
```

```
x)^n]) + 216*b*g*(e*f - d*g)^2*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a +
b*Log[c*(d + e*x)^n])) + 64*b*g^2*(e*f - d*g)*n*(b*e*n*x*(3*d^2 + 3*d*e*x +
 e^2*x^2) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])) + 9*b*g^3*n*(b*e*n*x*
(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) - 4*(d + e*x)^4*(a + b*Log[c*(d
 + e*x)^n])))/(288*e^4)
```

Maple [C] time = 0.888, size = 6770, normalized size = 18.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.30261, size = 1116, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*g^3*x^4*log((e*x + d)^n*c)^2 + 1/2*a*b*g^3*x^4*log((e*x + d)^n*c) +
 b^2*f*g^2*x^3*log((e*x + d)^n*c)^2 + 1/4*a^2*g^3*x^4 + 2*a*b*f*g^2*x^3*log
((e*x + d)^n*c) + 3/2*b^2*f^2*g*x^2*log((e*x + d)^n*c)^2 + a^2*f*g^2*x^3 -
2*a*b*e*f^3*n*(x/e - d*log(e*x + d)/e^2) - 1/24*a*b*e*g^3*n*(12*d^4*log(e*x
 + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4) + 1/3*a
*b*e*f*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^
3) - 3/2*a*b*e*f^2*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 3*a
*b*f^2*g*x^2*log((e*x + d)^n*c) + b^2*f^3*x*log((e*x + d)^n*c)^2 + 3/2*a^2*
f^2*g*x^2 + 2*a*b*f^3*x*log((e*x + d)^n*c) - (2*e*n*(x/e - d*log(e*x + d)/e
^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/
e)*b^2*f^3 - 3/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log(
(e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x
+ d))*n^2/e^2)*b^2*f^2*g + 1/18*(6*e*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3
 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c) + (4*e^3*x^3 - 15*d*e^2*x^2
 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n^2/e^3)*b^2*f
*g^2 - 1/288*(12*e*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 +
6*d^2*e*x^2 - 12*d^3*x)/e^4)*log((e*x + d)^n*c) - (9*e^4*x^4 - 28*d*e^3*x^3
 + 78*d^2*e^2*x^2 + 72*d^4*log(e*x + d)^2 - 300*d^3*e*x + 300*d^4*log(e*x +
 d))*n^2/e^4)*b^2*g^3 + a^2*f^3*x
```

Fricas [B] time = 2.52976, size = 2429, normalized size = 6.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] 1/288*(9*(b^2*e^4*g^3*n^2 - 4*a*b*e^4*g^3*n + 8*a^2*e^4*g^3)*x^4 + 4*(72*a^
2*e^4*f*g^2 + (16*b^2*e^4*f*g^2 - 7*b^2*d*e^3*g^3)*n^2 - 12*(4*a*b*e^4*f*g^
2 - a*b*d*e^3*g^3)*n)*x^3 + 6*(72*a^2*e^4*f^2*g + (36*b^2*e^4*f^2*g - 40*b^
2*d*e^3*f*g^2 + 13*b^2*d^2*e^2*g^3)*n^2 - 12*(6*a*b*e^4*f^2*g - 4*a*b*d*e^3
*f*g^2 + a*b*d^2*e^2*g^3)*n)*x^2 + 72*(b^2*e^4*g^3*n^2*x^4 + 4*b^2*e^4*f*g^
2*n^2*x^3 + 6*b^2*e^4*f^2*g*n^2*x^2 + 4*b^2*e^4*f^3*n^2*x + (4*b^2*d*e^3*f^
3 - 6*b^2*d^2*e^2*f^2*g + 4*b^2*d^3*e*f*g^2 - b^2*d^4*g^3)*n^2)*log(e*x + d
)^2 + 72*(b^2*e^4*g^3*x^4 + 4*b^2*e^4*f*g^2*x^3 + 6*b^2*e^4*f^2*g*x^2 + 4*b
^2*e^4*f^3*x)*log(c)^2 + 12*(24*a^2*e^4*f^3 + (48*b^2*e^4*f^3 - 108*b^2*d*e
^3*f^2*g + 88*b^2*d^2*e^2*f*g^2 - 25*b^2*d^3*e*g^3)*n^2 - 12*(4*a*b*e^4*f^3
 - 6*a*b*d*e^3*f^2*g + 4*a*b*d^2*e^2*f*g^2 - a*b*d^3*e*g^3)*n)*x - 12*(3*(b
^2*e^4*g^3*n^2 - 4*a*b*e^4*g^3*n)*x^4 - 4*(12*a*b*e^4*f*g^2*n - (4*b^2*e^4*
f*g^2 - b^2*d*e^3*g^3)*n^2)*x^3 + (48*b^2*d*e^3*f^3 - 108*b^2*d^2*e^2*f^2*g
 + 88*b^2*d^3*e*f*g^2 - 25*b^2*d^4*g^3)*n^2 - 6*(12*a*b*e^4*f^2*g*n - (6*b^
2*e^4*f^2*g - 4*b^2*d*e^3*f*g^2 + b^2*d^2*e^2*g^3)*n^2)*x^2 - 12*(4*a*b*d*e
^3*f^3 - 6*a*b*d^2*e^2*f^2*g + 4*a*b*d^3*e*f*g^2 - a*b*d^4*g^3)*n - 12*(4*a
*b*e^4*f^3*n - (4*b^2*e^4*f^3 - 6*b^2*d*e^3*f^2*g + 4*b^2*d^2*e^2*f*g^2 - b
^2*d^3*e*g^3)*n^2)*x - 12*(b^2*e^4*g^3*n*x^4 + 4*b^2*e^4*f*g^2*n*x^3 + 6*b^
2*e^4*f^2*g*n*x^2 + 4*b^2*e^4*f^3*n*x + (4*b^2*d*e^3*f^3 - 6*b^2*d^2*e^2*f^
2*g + 4*b^2*d^3*e*f*g^2 - b^2*d^4*g^3)*n)*log(c))*log(e*x + d) - 12*(3*(b^2
*e^4*g^3*n - 4*a*b*e^4*g^3)*x^4 - 4*(12*a*b*e^4*f*g^2 - (4*b^2*e^4*f*g^2 -
b^2*d*e^3*g^3)*n)*x^3 - 6*(12*a*b*e^4*f^2*g - (6*b^2*e^4*f^2*g - 4*b^2*d*e^
3*f*g^2 + b^2*d^2*e^2*g^3)*n)*x^2 - 12*(4*a*b*e^4*f^3 - (4*b^2*e^4*f^3 - 6*
b^2*d*e^3*f^2*g + 4*b^2*d^2*e^2*f*g^2 - b^2*d^3*e*g^3)*n)*x)*log(c))/e^4
```

Sympy [A] time = 20.5847, size = 1744, normalized size = 4.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*f**3*x + 3*a**2*f**2*g*x**2/2 + a**2*f*g**2*x**3 + a**2*g**
3*x**4/4 - a*b*d**4*g**3*n*log(d + e*x)/(2*e**4) + 2*a*b*d**3*f*g**2*n*log(
d + e*x)/e**3 + a*b*d**3*g**3*n*x/(2*e**3) - 3*a*b*d**2*f**2*g*n*log(d + e*
x)/e**2 - 2*a*b*d**2*f*g**2*n*x/e**2 - a*b*d**2*g**3*n*x**2/(4*e**2) + 2*a*
b*d*f**3*n*log(d + e*x)/e + 3*a*b*d*f**2*g*n*x/e + a*b*d*f*g**2*n*x**2/e +
a*b*d*g**3*n*x**3/(6*e) + 2*a*b*f**3*n*x*log(d + e*x) - 2*a*b*f**3*n*x + 2*
a*b*f**3*x*log(c) + 3*a*b*f**2*g*n*x**2*log(d + e*x) - 3*a*b*f**2*g*n*x**2/
2 + 3*a*b*f**2*g*x**2*log(c) + 2*a*b*f*g**2*n*x**3*log(d + e*x) - 2*a*b*f*g
**2*n*x**3/3 + 2*a*b*f*g**2*x**3*log(c) + a*b*g**3*n*x**4*log(d + e*x)/2 -
a*b*g**3*n*x**4/8 + a*b*g**3*x**4*log(c)/2 - b**2*d**4*g**3*n**2*log(d + e*
x)**2/(4*e**4) + 25*b**2*d**4*g**3*n**2*log(d + e*x)/(24*e**4) - b**2*d**4*
g**3*n*log(c)*log(d + e*x)/(2*e**4) + b**2*d**3*f*g**2*n**2*log(d + e*x)**2
/e**3 - 11*b**2*d**3*f*g**2*n**2*log(d + e*x)/(3*e**3) + 2*b**2*d**3*f*g**2
*n*log(c)*log(d + e*x)/e**3 + b**2*d**3*g**3*n**2*x*log(d + e*x)/(2*e**3) -
 25*b**2*d**3*g**3*n**2*x/(24*e**3) + b**2*d**3*g**3*n*x*log(c)/(2*e**3) -
3*b**2*d**2*f**2*g*n**2*log(d + e*x)**2/(2*e**2) + 9*b**2*d**2*f**2*g*n**2*
log(d + e*x)/(2*e**2) - 3*b**2*d**2*f**2*g*n*log(c)*log(d + e*x)/e**2 - 2*b
**2*d**2*f*g**2*n**2*x*log(d + e*x)/e**2 + 11*b**2*d**2*f*g**2*n**2*x/(3*e*
*2) - 2*b**2*d**2*f*g**2*n*x*log(c)/e**2 - b**2*d**2*g**3*n**2*x**2*log(d +
 e*x)/(4*e**2) + 13*b**2*d**2*g**3*n**2*x**2/(48*e**2) - b**2*d**2*g**3*n*x
**2*log(c)/(4*e**2) + b**2*d*f**3*n**2*log(d + e*x)**2/e - 2*b**2*d*f**3*n*
*2*log(d + e*x)/e + 2*b**2*d*f**3*n*log(c)*log(d + e*x)/e + 3*b**2*d*f**2*g
*n**2*x*log(d + e*x)/e - 9*b**2*d*f**2*g*n**2*x/(2*e) + 3*b**2*d*f**2*g*n*x
*log(c)/e + b**2*d*f*g**2*n**2*x**2*log(d + e*x)/e - 5*b**2*d*f*g**2*n**2*x
```

```
**2/(6*e) + b**2*d*f*g**2*n*x**2*log(c)/e + b**2*d*g**3*n**2*x**3*log(d + e
*x)/(6*e) - 7*b**2*d*g**3*n**2*x**3/(72*e) + b**2*d*g**3*n*x**3*log(c)/(6*e
) + b**2*f**3*n**2*x*log(d + e*x)**2 - 2*b**2*f**3*n**2*x*log(d + e*x) + 2*
b**2*f**3*n**2*x + 2*b**2*f**3*n*x*log(c)*log(d + e*x) - 2*b**2*f**3*n*x*lo
g(c) + b**2*f**3*x*log(c)**2 + 3*b**2*f**2*g*n**2*x**2*log(d + e*x)**2/2 -
3*b**2*f**2*g*n**2*x**2*log(d + e*x)/2 + 3*b**2*f**2*g*n**2*x**2/4 + 3*b**2
*f**2*g*n*x**2*log(c)*log(d + e*x) - 3*b**2*f**2*g*n*x**2*log(c)/2 + 3*b**2
*f**2*g*x**2*log(c)**2/2 + b**2*f*g**2*n**2*x**3*log(d + e*x)**2 - 2*b**2*f
*g**2*n**2*x**3*log(d + e*x)/3 + 2*b**2*f*g**2*n**2*x**3/9 + 2*b**2*f*g**2*
n*x**3*log(c)*log(d + e*x) - 2*b**2*f*g**2*n*x**3*log(c)/3 + b**2*f*g**2*x*
*3*log(c)**2 + b**2*g**3*n**2*x**4*log(d + e*x)**2/4 - b**2*g**3*n**2*x**4*
log(d + e*x)/8 + b**2*g**3*n**2*x**4/32 + b**2*g**3*n*x**4*log(c)*log(d + e
*x)/2 - b**2*g**3*n*x**4*log(c)/8 + b**2*g**3*x**4*log(c)**2/4, Ne(e, 0)),
((a + b*log(c*d**n))**2*(f**3*x + 3*f**2*g*x**2/2 + f*g**2*x**3 + g**3*x**4
/4), True))
```

Giac [B] time = 1.33397, size = 3220, normalized size = 8.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*b^2*g^3*n^2*e^(-4)*log(x*e + d)^2 - (x*e + d)^3*b^2*d*g^3*n
^2*e^(-4)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^2*d^2*g^3*n^2*e^(-4)*log(x*e +
 d)^2 - (x*e + d)*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2 - 1/8*(x*e + d)^4*b
^2*g^3*n^2*e^(-4)*log(x*e + d) + 2/3*(x*e + d)^3*b^2*d*g^3*n^2*e^(-4)*log(x
*e + d) - 3/2*(x*e + d)^2*b^2*d^2*g^3*n^2*e^(-4)*log(x*e + d) + 2*(x*e + d)
*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d) + (x*e + d)^3*b^2*f*g^2*n^2*e^(-3)*log
(x*e + d)^2 - 3*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 3*(x*e
+ d)*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 1/2*(x*e + d)^4*b^2*g^3*n*e^
(-4)*log(x*e + d)*log(c) - 2*(x*e + d)^3*b^2*d*g^3*n*e^(-4)*log(x*e + d)*lo
g(c) + 3*(x*e + d)^2*b^2*d^2*g^3*n*e^(-4)*log(x*e + d)*log(c) - 2*(x*e + d)
*b^2*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c) + 1/32*(x*e + d)^4*b^2*g^3*n^2*e^
(-4) - 2/9*(x*e + d)^3*b^2*d*g^3*n^2*e^(-4) + 3/4*(x*e + d)^2*b^2*d^2*g^3*n
^2*e^(-4) - 2*(x*e + d)*b^2*d^3*g^3*n^2*e^(-4) - 2/3*(x*e + d)^3*b^2*f*g^2*
n^2*e^(-3)*log(x*e + d) + 3*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)
 - 6*(x*e + d)*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d) + 1/2*(x*e + d)^4*a*b*
g^3*n*e^(-4)*log(x*e + d) - 2*(x*e + d)^3*a*b*d*g^3*n*e^(-4)*log(x*e + d) +
 3*(x*e + d)^2*a*b*d^2*g^3*n*e^(-4)*log(x*e + d) - 2*(x*e + d)*a*b*d^3*g^3*
n*e^(-4)*log(x*e + d) + 3/2*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2)*log(x*e + d)^2
 - 3*(x*e + d)*b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d)^2 - 1/8*(x*e + d)^4*b^2*
g^3*n*e^(-4)*log(c) + 2/3*(x*e + d)^3*b^2*d*g^3*n*e^(-4)*log(c) - 3/2*(x*e
+ d)^2*b^2*d^2*g^3*n*e^(-4)*log(c) + 2*(x*e + d)*b^2*d^3*g^3*n*e^(-4)*log(c
) + 2*(x*e + d)^3*b^2*f*g^2*n*e^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)^2*b^
2*d*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 6*(x*e + d)*b^2*d^2*f*g^2*n*e^(-3)
*log(x*e + d)*log(c) + 1/4*(x*e + d)^4*b^2*g^3*e^(-4)*log(c)^2 - (x*e + d)^
3*b^2*d*g^3*e^(-4)*log(c)^2 + 3/2*(x*e + d)^2*b^2*d^2*g^3*e^(-4)*log(c)^2 -
 (x*e + d)*b^2*d^3*g^3*e^(-4)*log(c)^2 + 2/9*(x*e + d)^3*b^2*f*g^2*n^2*e^(-
3) - 3/2*(x*e + d)^2*b^2*d*f*g^2*n^2*e^(-3) + 6*(x*e + d)*b^2*d^2*f*g^2*n^2
*e^(-3) - 1/8*(x*e + d)^4*a*b*g^3*n*e^(-4) + 2/3*(x*e + d)^3*a*b*d*g^3*n*e^
(-4) - 3/2*(x*e + d)^2*a*b*d^2*g^3*n*e^(-4) + 2*(x*e + d)*a*b*d^3*g^3*n*e^(
-4) - 3/2*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^2*d
*f^2*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e + d)^3*a*b*f*g^2*n*e^(-3)*log(x*e +
 d) - 6*(x*e + d)^2*a*b*d*f*g^2*n*e^(-3)*log(x*e + d) + 6*(x*e + d)*a*b*d^2
*f*g^2*n*e^(-3)*log(x*e + d) + (x*e + d)*b^2*f^3*n^2*e^(-1)*log(x*e + d)^2
```

```
- 2/3*(x*e + d)^3*b^2*f*g^2*n*e^(-3)*log(c) + 3*(x*e + d)^2*b^2*d*f*g^2*n*e
^(-3)*log(c) - 6*(x*e + d)*b^2*d^2*f*g^2*n*e^(-3)*log(c) + 1/2*(x*e + d)^4*
a*b*g^3*e^(-4)*log(c) - 2*(x*e + d)^3*a*b*d*g^3*e^(-4)*log(c) + 3*(x*e + d)
^2*a*b*d^2*g^3*e^(-4)*log(c) - 2*(x*e + d)*a*b*d^3*g^3*e^(-4)*log(c) + 3*(x
*e + d)^2*b^2*f^2*g*n*e^(-2)*log(x*e + d)*log(c) - 6*(x*e + d)*b^2*d*f^2*g*
n*e^(-2)*log(x*e + d)*log(c) + (x*e + d)^3*b^2*f*g^2*e^(-3)*log(c)^2 - 3*(x
*e + d)^2*b^2*d*f*g^2*e^(-3)*log(c)^2 + 3*(x*e + d)*b^2*d^2*f*g^2*e^(-3)*lo
g(c)^2 + 3/4*(x*e + d)^2*b^2*f^2*g*n^2*e^(-2) - 6*(x*e + d)*b^2*d*f^2*g*n^2
*e^(-2) - 2/3*(x*e + d)^3*a*b*f*g^2*n*e^(-3) + 3*(x*e + d)^2*a*b*d*f*g^2*n*
e^(-3) - 6*(x*e + d)*a*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*e + d)^4*a^2*g^3*e^(-4
) - (x*e + d)^3*a^2*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a^2*d^2*g^3*e^(-4) - (x*
e + d)*a^2*d^3*g^3*e^(-4) - 2*(x*e + d)*b^2*f^3*n^2*e^(-1)*log(x*e + d) + 3
*(x*e + d)^2*a*b*f^2*g*n*e^(-2)*log(x*e + d) - 6*(x*e + d)*a*b*d*f^2*g*n*e^
(-2)*log(x*e + d) - 3/2*(x*e + d)^2*b^2*f^2*g*n*e^(-2)*log(c) + 6*(x*e + d)
*b^2*d*f^2*g*n*e^(-2)*log(c) + 2*(x*e + d)^3*a*b*f*g^2*e^(-3)*log(c) - 6*(x
*e + d)^2*a*b*d*f*g^2*e^(-3)*log(c) + 6*(x*e + d)*a*b*d^2*f*g^2*e^(-3)*log(
c) + 2*(x*e + d)*b^2*f^3*n*e^(-1)*log(x*e + d)*log(c) + 3/2*(x*e + d)^2*b^2
*f^2*g*e^(-2)*log(c)^2 - 3*(x*e + d)*b^2*d*f^2*g*e^(-2)*log(c)^2 + 2*(x*e +
 d)*b^2*f^3*n^2*e^(-1) - 3/2*(x*e + d)^2*a*b*f^2*g*n*e^(-2) + 6*(x*e + d)*a
*b*d*f^2*g*n*e^(-2) + (x*e + d)^3*a^2*f*g^2*e^(-3) - 3*(x*e + d)^2*a^2*d*f*
g^2*e^(-3) + 3*(x*e + d)*a^2*d^2*f*g^2*e^(-3) + 2*(x*e + d)*a*b*f^3*n*e^(-1
)*log(x*e + d) - 2*(x*e + d)*b^2*f^3*n*e^(-1)*log(c) + 3*(x*e + d)^2*a*b*f^
2*g*e^(-2)*log(c) - 6*(x*e + d)*a*b*d*f^2*g*e^(-2)*log(c) + (x*e + d)*b^2*f
^3*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*f^3*n*e^(-1) + 3/2*(x*e + d)^2*a^2*f^2
*g*e^(-2) - 3*(x*e + d)*a^2*d*f^2*g*e^(-2) + 2*(x*e + d)*a*b*f^3*e^(-1)*log
(c) + (x*e + d)*a^2*f^3*e^(-1)
```

3.45 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^2 \, dx$

Optimal. Leaf size=287

$$-\frac{2bn(ef-dg)^3\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^3g}-\frac{2bn(d+ex)(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}-\frac{bgn(d+ex)^2(ef-c}{}$$

```
[Out] (2*b^2*(e*f - d*g)^2*n^2*x)/e^2 + (b^2*g*(e*f - d*g)*n^2*(d + e*x)^2)/(2*e^
3) + (2*b^2*g^2*n^2*(d + e*x)^3)/(27*e^3) + (b^2*(e*f - d*g)^3*n^2*Log[d +
e*x]^2)/(3*e^3*g) - (2*b*(e*f - d*g)^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n
]))/e^3 - (b*g*(e*f - d*g)*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/e^3 -
(2*b*g^2*n*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (2*b*(e*f - d*
g)^3*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e^3*g) + ((f + g*x)^3*(a
 + b*Log[c*(d + e*x)^n])^2)/(3*g)
```

Rubi [A] time = 0.412581, antiderivative size = 243, normalized size of antiderivative = 0.85, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301}

$$-\frac{bn\left(\frac{9g^2(d+ex)^2(ef-dg)}{e^3}+\frac{18g(d+ex)(ef-dg)^2}{e^3}+\frac{6(ef-dg)^3\log(d+ex)}{e^3}+\frac{2g^3(d+ex)^3}{e^3}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{9g}+\frac{(f+gx)^3\left(a+b\log\left(c(d\right.\right.}{3g}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*b^2*(e*f - d*g)^2*n^2*x)/e^2 + (b^2*g*(e*f - d*g)*n^2*(d + e*x)^2)/(2*e^
3) + (2*b^2*g^2*n^2*(d + e*x)^3)/(27*e^3) + (b^2*(e*f - d*g)^3*n^2*Log[d +
e*x]^2)/(3*e^3*g) - (b*n*((18*g*(e*f - d*g)^2*(d + e*x))/e^3 + (9*g^2*(e*f
- d*g)*(d + e*x)^2)/e^3 + (2*g^3*(d + e*x)^3)/e^3 + (6*(e*f - d*g)^3*Log[d
+ e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/(9*g) + ((f + g*x)^3*(a + b*Log[c*
(d + e*x)^n])^2)/(3*g)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

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

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

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

Rubi steps

$$\int (f+gx)^2 (a+b\log(c(d+ex)^n))^2\,dx = \frac{(f+gx)^3 (a+b\log(c(d+ex)^n))^2}{3g} - \frac{(2ben)\int \frac{(f+gx)^3(a+b\log(c(d+ex)^n))}{d+ex}\,dx}{3g}$$

$$= \frac{(f+gx)^3 (a+b\log(c(d+ex)^n))^2}{3g} - \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3(a+b\log(cx^n))}{x}\,d\right.}{3g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3}+\frac{9g^2(ef-dg)(d+ex)^2}{e^3}+\frac{2g^3(d+ex)^3}{e^3}+\frac{6(ef-dg)^3\log(d+ex)}{e^3}\right)(a+}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3}+\frac{9g^2(ef-dg)(d+ex)^2}{e^3}+\frac{2g^3(d+ex)^3}{e^3}+\frac{6(ef-dg)^3\log(d+ex)}{e^3}\right)(a+}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3}+\frac{9g^2(ef-dg)(d+ex)^2}{e^3}+\frac{2g^3(d+ex)^3}{e^3}+\frac{6(ef-dg)^3\log(d+ex)}{e^3}\right)(a+}{9g}$$

$$= -\frac{bn\left(\frac{18g(ef-dg)^2(d+ex)}{e^3}+\frac{9g^2(ef-dg)(d+ex)^2}{e^3}+\frac{2g^3(d+ex)^3}{e^3}+\frac{6(ef-dg)^3\log(d+ex)}{e^3}\right)(a+}{9g}$$

$$= \frac{2b^2(ef-dg)^2n^2x}{e^2} + \frac{b^2g(ef-dg)n^2(d+ex)^2}{2e^3} + \frac{2b^2g^2n^2(d+ex)^3}{27e^3} + \frac{b^2(ef-}{}$$

Mathematica [A] time = 0.149358, size = 247, normalized size = 0.86

$$\frac{4bg^2n\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3(a+b\log(c(d+ex)^n))\right)+54g(d+ex)^2(ef-dg)(a+b\log(c(d+ex)^n))^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (54*(e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 54*g*(e*f - d*g)
*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + 18*g^2*(d + e*x)^3*(a + b*Log[c
*(d + e*x)^n])^2 - 108*b*(e*f - d*g)^2*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c
*(d + e*x)^n]) + 27*b*g*(e*f - d*g)*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])) + 4*b*g^2*n*(b*e*n*x*(3*d^2 + 3*d*e*x + e^2*x^2
) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])))/(54*e^3)
```

Maple [C] time = 0.769, size = 4597, normalized size = 16.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] 1/3*(g*x+f)^3*b^2/g*ln((e*x+d)^n)^2+2/e*g*a*b*d*f*n*x+1/3*ln(c)^2*b^2*g^2*x
^3+ln(c)^2*b^2*f^2*x+2/27*b^2*g^2*n^2*x^3+2*b^2*f^2*n^2*x+1/3*a^2*g^2*x^3+a
^2*f^2*x+a^2*f*g*x^2+1/9*b*(-9*I*Pi*b*e^3*f^2*g*x*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+6*a*e^3*g^3*x^3+6*ln(e*x+d)*b*d^3*g^3*n-6*ln(e*x+d)*
b*e^3*f^3*n+6*ln(c)*b*e^3*g^3*x^3-2*b*e^3*g^3*n*x^3+18*a*e^3*f*g^2*x^2+18*a
*e^3*f^2*g*x+3*b*d*e^2*g^3*n*x^2-9*b*e^3*f*g^2*n*x^2-6*b*d^2*e*g^3*n*x-18*b
*e^3*f^2*g*n*x+18*ln(c)*b*e^3*f^2*g*x+18*ln(c)*b*e^3*f*g^2*x^2+18*b*d*e^2*f
*g^2*n*x-18*ln(e*x+d)*b*d^2*e*f*g^2*n+18*ln(e*x+d)*b*d*e^2*f^2*g*n+3*I*Pi*b
*e^3*g^3*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*e^3*g^3*x^3*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*c*(e*x+d)^n)^3
-3*I*Pi*b*e^3*g^3*x^3*csgn(I*c*(e*x+d)^n)^3-3*I*Pi*b*e^3*g^3*x^3*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+9*I*Pi*b*e^3*f^2*g*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+9*I*Pi*b*e^3*f^2
*g*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-9*I*Pi*b*e^3*f*g^2*x^2*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-9*I*Pi*b*e^3*f^2*g*x*csgn(I*c*(e*x
+d)^n)^3)/e^3/g*ln((e*x+d)^n)-1/12*g^2*Pi^2*b^2*x^3*csgn(I*c*(e*x+d)^n)^6+1
/3/g*b^2*f^3*n^2*ln(e*x+d)^2-2/9*ln(c)*b^2*g^2*n*x^3+ln(c)^2*b^2*f*g*x^2+2/
3*ln(c)*a*b*g^2*x^3-2*b^2*n*ln(c)*f^2*x+2*ln(c)*a*b*f^2*x-1/4*Pi^2*b^2*f^2*
x*csgn(I*c*(e*x+d)^n)^6+1/6*g^2*Pi^2*b^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)^2*
csgn(I*c*(e*x+d)^n)^3-1/4*g*Pi^2*b^2*f*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*
x+d)^n)^4+1/2*g*Pi^2*b^2*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/12
*g^2*Pi^2*b^2*x^3*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/2
*g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/4*g*Pi^2*b^2*f*x^2*csgn
(I*c)^2*csgn(I*c*(e*x+d)^n)^4-1/3*g^2*Pi^2*b^2*x^3*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^4+1/2*Pi^2*b^2*f^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^3+1/2*Pi^2*b^2*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn
(I*c*(e*x+d)^n)^3-Pi^2*b^2*f^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^4+I*b^2*n*Pi*f^2*x*csgn(I*c*(e*x+d)^n)^3+2/3/e^3*g^2*ln(c)*ln(e*x+d)*
b^2*d^3*n+2/3/e^3*g^2*ln(e*x+d)*a*b*d^3*n+1/e^2*g*b^2*d^2*f*n^2*ln(e*x+d)^2
+1/3/e*g^2*ln(c)*b^2*d*n*x^2-2/3/e^2*g^2*ln(c)*b^2*d^2*n*x+3/e^2*g*ln(e*x+d
)*b^2*d^2*f*n^2-1/4*Pi^2*b^2*f^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c
*(e*x+d)^n)^2+1/9*I*g^2*b^2*n*Pi*x^3*csgn(I*c*(e*x+d)^n)^3-I*ln(c)*Pi*b^2*f
^2*x*csgn(I*c*(e*x+d)^n)^3-I*Pi*a*b*f^2*x*csgn(I*c*(e*x+d)^n)^3-1/3*I*g^2*l
n(c)*Pi*b^2*x^3*csgn(I*c*(e*x+d)^n)^3-1/3*I*g^2*Pi*a*b*x^3*csgn(I*c*(e*x+d)
^n)^3+I/e^2*g*Pi*ln(e*x+d)*b^2*d^2*f*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)-I/e*g*Pi*b^2*d*f*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-5/18/e*g^2*b^2*d*n^2*x^2+11/9/e^2*g^2*b^2*d^2*n^2*x-11/9/e^3*g^2*ln(e
*x+d)*b^2*d^3*n^2-1/3/e^3*g^2*b^2*d^3*n^2*ln(e*x+d)^2+1/2*Pi^2*b^2*f^2*x*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4*Pi^2*b^2*f^2*x*csgn(I*c)^2*csgn(I
```

```
*c*(e*x+d)^n)^4+1/2*Pi^2*b^2*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-2/e^2*g*
ln(c)*ln(e*x+d)*b^2*d^2*f*n-2/e^2*g*ln(e*x+d)*a*b*d^2*f*n+2/e*g*ln(c)*b^2*d
*f*n*x-g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1
/4*g*Pi^2*b^2*f*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1
/2*g*Pi^2*b^2*f*x^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/2
*g*Pi^2*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-2/9*a
*b*g^2*n*x^3+1/2*b^2*f*g*n^2*x^2-2*a*b*f^2*n*x-a*b*f*g*n*x^2-1/4*Pi^2*b^2*f
^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-ln(c)*b^2*f*g*n*x^2+2*ln(c)*
a*b*f*g*x^2-1/4*g*Pi^2*b^2*f*x^2*csgn(I*c*(e*x+d)^n)^6+1/6*g^2*Pi^2*b^2*x^3
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/12*g^2*Pi^2*b^2*x^3*csgn(I*c)^2*csgn(I*c
*(e*x+d)^n)^4-1/e*b^2*d*f^2*n^2*ln(e*x+d)^2-1/12*g^2*Pi^2*b^2*x^3*csgn(I*(e
*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/6*g^2*Pi^2*b^2*x^3*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^5-2/e*ln(e*x+d)*b^2*d*f^2*n^2+I*g*ln(c)*Pi*b^2*f*x^2*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+I*g*ln(c)*Pi*b^2*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2+I*g*Pi*a*b*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*a*b*
f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*b^2*n*Pi*f^2*x*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*c*(e*
x+d)^n)^3+I*Pi*a*b*f^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*a*b*f^2*x*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2*f^2*x*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
+1/3*I*g^2*Pi*a*b*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I*g^2*ln(c)*Pi*b^
2*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*a*b*f*x^2*csgn(I*c*(e*x+d)^n)^
3+1/3*I*g^2*Pi*a*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*ln(c)*Pi
*b^2*f*x^2*csgn(I*c*(e*x+d)^n)^3+1/3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/9*I*g^2*b^2*n*Pi*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2-1/9*I*g^2*b^2*n*Pi*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*g
*b^2*n*Pi*f*x^2*csgn(I*c*(e*x+d)^n)^3-I*b^2*n*Pi*f^2*x*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2-I*b^2*n*Pi*f^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2/3/e^
2*g^2*a*b*d^2*n*x+1/3/e*g^2*a*b*d*n*x^2-3/e*g*b^2*d*f*n^2*x+2/e*ln(c)*ln(e*
x+d)*b^2*d*f^2*n+2/e*ln(e*x+d)*a*b*d*f^2*n+1/6*g^2*Pi^2*b^2*x^3*csgn(I*c)^2
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-I/e*Pi*ln(e*x+d)*b^2*d*f^2*n*csgn(
I*c*(e*x+d)^n)^3+1/9*I*g^2*b^2*n*Pi*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-1/2*I*g*b^2*n*Pi*f*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*g
*b^2*n*Pi*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*a*b*f^2*x*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(c)*Pi*b^2*f^2*x*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^3*g^2*Pi*ln(e*x+d)*b^2*d^3*n*
csgn(I*c*(e*x+d)^n)^3+1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*csgn(I*c*(e*x+d)^n)^3-1/
3*I*g^2*ln(c)*Pi*b^2*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/
3*I*g^2*Pi*a*b*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/e^2*g*
Pi*ln(e*x+d)*b^2*d^2*f*n*csgn(I*c*(e*x+d)^n)^3+I/e*Pi*ln(e*x+d)*b^2*d*f^2*n
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/e*Pi*ln(e*x+d)*b^2*d*f^2*n*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2+1/3*I/e^3*g^2*Pi*ln(e*x+d)*b^2*d^3*n*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2+1/3*I/e^3*g^2*Pi*ln(e*x+d)*b^2*d^3*n*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2-1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
-1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I
/e*g^2*Pi*b^2*d*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/e*g*Pi*b^2*d*f*n*x*
csgn(I*c*(e*x+d)^n)^3+1/2*I*g*b^2*n*Pi*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)-I*g*ln(c)*Pi*b^2*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)-I*g*Pi*a*b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+I/e*g*Pi*b^2*d*f*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/e*Pi*ln(
e*x+d)*b^2*d*f^2*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^
3*g^2*Pi*ln(e*x+d)*b^2*d^3*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)+1/3*I/e^2*g^2*Pi*b^2*d^2*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)-I/e^2*g*Pi*ln(e*x+d)*b^2*d^2*f*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2-1/6*I/e*g^2*Pi*b^2*d*n*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)-I/e^2*g*Pi*ln(e*x+d)*b^2*d^2*f*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/e*g*Pi
*b^2*d*f*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
```

Maxima [B] time = 1.20479, size = 748, normalized size = 2.61

$$\frac{1}{3}\,b^2g^2x^3\log\left(\left(ex+d\right)^nc\right)^2+\frac{2}{3}\,abg^2x^3\log\left(\left(ex+d\right)^nc\right)+b^2fgx^2\log\left(\left(ex+d\right)^nc\right)^2+\frac{1}{3}\,a^2g^2x^3-2\,abef^2n\left(\frac{x}{e}-\frac{d\log\left(ex+\right.}{e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*b^2*g^2*x^3*log((e*x + d)^n*c)^2 + 2/3*a*b*g^2*x^3*log((e*x + d)^n*c) +
 b^2*f*g*x^2*log((e*x + d)^n*c)^2 + 1/3*a^2*g^2*x^3 - 2*a*b*e*f^2*n*(x/e -
d*log(e*x + d)/e^2) + 1/9*a*b*e*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3
- 3*d*e*x^2 + 6*d^2*x)/e^3) - a*b*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2
- 2*d*x)/e^2) + 2*a*b*f*g*x^2*log((e*x + d)^n*c) + b^2*f^2*x*log((e*x + d)^
n*c)^2 + a^2*f*g*x^2 + 2*a*b*f^2*x*log((e*x + d)^n*c) - (2*e*n*(x/e - d*log
(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x
 + d))*n^2/e)*b^2*f^2 - 1/2*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x
)/e^2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d
^2*log(e*x + d))*n^2/e^2)*b^2*f*g + 1/54*(6*e*n*(6*d^3*log(e*x + d)/e^4 - (
2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c) + (4*e^3*x^3 - 15*
d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n^2/e
^3)*b^2*g^2 + a^2*f^2*x
```

Fricas [B] time = 2.28045, size = 1571, normalized size = 5.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/54*(2*(2*b^2*e^3*g^2*n^2 - 6*a*b*e^3*g^2*n + 9*a^2*e^3*g^2)*x^3 + 3*(18*a
^2*e^3*f*g + (9*b^2*e^3*f*g - 5*b^2*d*e^2*g^2)*n^2 - 6*(3*a*b*e^3*f*g - a*b
*d*e^2*g^2)*n)*x^2 + 18*(b^2*e^3*g^2*n^2*x^3 + 3*b^2*e^3*f*g*n^2*x^2 + 3*b^
2*e^3*f^2*n^2*x + (3*b^2*d*e^2*f^2 - 3*b^2*d^2*e*f*g + b^2*d^3*g^2)*n^2)*lo
g(e*x + d)^2 + 18*(b^2*e^3*g^2*x^3 + 3*b^2*e^3*f*g*x^2 + 3*b^2*e^3*f^2*x)*l
og(c)^2 + 6*(9*a^2*e^3*f^2 + (18*b^2*e^3*f^2 - 27*b^2*d*e^2*f*g + 11*b^2*d^
2*e*g^2)*n^2 - 6*(3*a*b*e^3*f^2 - 3*a*b*d*e^2*f*g + a*b*d^2*e*g^2)*n)*x - 6
*(2*(b^2*e^3*g^2*n^2 - 3*a*b*e^3*g^2*n)*x^3 + (18*b^2*d*e^2*f^2 - 27*b^2*d^
2*e*f*g + 11*b^2*d^3*g^2)*n^2 - 3*(6*a*b*e^3*f*g*n - (3*b^2*e^3*f*g - b^2*d
*e^2*g^2)*n^2)*x^2 - 6*(3*a*b*d*e^2*f^2 - 3*a*b*d^2*e*f*g + a*b*d^3*g^2)*n
- 6*(3*a*b*e^3*f^2*n - (3*b^2*e^3*f^2 - 3*b^2*d*e^2*f*g + b^2*d^2*e*g^2)*n^
2)*x - 6*(b^2*e^3*g^2*n*x^3 + 3*b^2*e^3*f*g*n*x^2 + 3*b^2*e^3*f^2*n*x + (3*
b^2*d*e^2*f^2 - 3*b^2*d^2*e*f*g + b^2*d^3*g^2)*n)*log(c))*log(e*x + d) - 6*
(2*(b^2*e^3*g^2*n - 3*a*b*e^3*g^2)*x^3 - 3*(6*a*b*e^3*f*g - (3*b^2*e^3*f*g
- b^2*d*e^2*g^2)*n)*x^2 - 6*(3*a*b*e^3*f^2 - (3*b^2*e^3*f^2 - 3*b^2*d*e^2*f
*g + b^2*d^2*e*g^2)*n)*x)*log(c))/e^3
```

Sympy [A] time = 9.54133, size = 1103, normalized size = 3.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Piecewise((a**2*f**2*x + a**2*f*g*x**2 + a**2*g**2*x**3/3 + 2*a*b*d**3*g**2
*n*log(d + e*x)/(3*e**3) - 2*a*b*d**2*f*g*n*log(d + e*x)/e**2 - 2*a*b*d**2*
g**2*n*x/(3*e**2) + 2*a*b*d*f**2*n*log(d + e*x)/e + 2*a*b*d*f*g*n*x/e + a*b
*d*g**2*n*x**2/(3*e) + 2*a*b*f**2*n*x*log(d + e*x) - 2*a*b*f**2*n*x + 2*a*b
*f**2*x*log(c) + 2*a*b*f*g*n*x**2*log(d + e*x) - a*b*f*g*n*x**2 + 2*a*b*f*g
*x**2*log(c) + 2*a*b*g**2*n*x**3*log(d + e*x)/3 - 2*a*b*g**2*n*x**3/9 + 2*a
*b*g**2*x**3*log(c)/3 + b**2*d**3*g**2*n**2*log(d + e*x)**2/(3*e**3) - 11*b
**2*d**3*g**2*n**2*log(d + e*x)/(9*e**3) + 2*b**2*d**3*g**2*n*log(c)*log(d
+ e*x)/(3*e**3) - b**2*d**2*f*g*n**2*log(d + e*x)**2/e**2 + 3*b**2*d**2*f*g
*n**2*log(d + e*x)/e**2 - 2*b**2*d**2*f*g*n*log(c)*log(d + e*x)/e**2 - 2*b*
*2*d**2*g**2*n**2*x*log(d + e*x)/(3*e**2) + 11*b**2*d**2*g**2*n**2*x/(9*e**
2) - 2*b**2*d**2*g**2*n*x*log(c)/(3*e**2) + b**2*d*f**2*n**2*log(d + e*x)**
2/e - 2*b**2*d*f**2*n**2*log(d + e*x)/e + 2*b**2*d*f**2*n*log(c)*log(d + e*
x)/e + 2*b**2*d*f*g*n**2*x*log(d + e*x)/e - 3*b**2*d*f*g*n**2*x/e + 2*b**2*
d*f*g*n*x*log(c)/e + b**2*d*g**2*n**2*x**2*log(d + e*x)/(3*e) - 5*b**2*d*g*
*2*n**2*x**2/(18*e) + b**2*d*g**2*n*x**2*log(c)/(3*e) + b**2*f**2*n**2*x*lo
g(d + e*x)**2 - 2*b**2*f**2*n**2*x*log(d + e*x) + 2*b**2*f**2*n**2*x + 2*b*
*2*f**2*n*x*log(c)*log(d + e*x) - 2*b**2*f**2*n*x*log(c) + b**2*f**2*x*log(
c)**2 + b**2*f*g*n**2*x**2*log(d + e*x)**2 - b**2*f*g*n**2*x**2*log(d + e*x
) + b**2*f*g*n**2*x**2/2 + 2*b**2*f*g*n*x**2*log(c)*log(d + e*x) - b**2*f*g
*n*x**2*log(c) + b**2*f*g*x**2*log(c)**2 + b**2*g**2*n**2*x**3*log(d + e*x)
**2/3 - 2*b**2*g**2*n**2*x**3*log(d + e*x)/9 + 2*b**2*g**2*n**2*x**3/27 + 2
*b**2*g**2*n*x**3*log(c)*log(d + e*x)/3 - 2*b**2*g**2*n*x**3*log(c)/9 + b**
2*g**2*x**3*log(c)**2/3, Ne(e, 0)), ((a + b*log(c*d**n))**2*(f**2*x + f*g*x
**2 + g**2*x**3/3), True))
```

Giac [B] time = 1.37615, size = 1808, normalized size = 6.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(x*e + d)^3*b^2*g^2*n^2*e^(-3)*log(x*e + d)^2 - (x*e + d)^2*b^2*d*g^2*n
^2*e^(-3)*log(x*e + d)^2 + (x*e + d)*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d)^2
- 2/9*(x*e + d)^3*b^2*g^2*n^2*e^(-3)*log(x*e + d) + (x*e + d)^2*b^2*d*g^2*n
^2*e^(-3)*log(x*e + d) - 2*(x*e + d)*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d) +
(x*e + d)^2*b^2*f*g*n^2*e^(-2)*log(x*e + d)^2 - 2*(x*e + d)*b^2*d*f*g*n^2*e
^(-2)*log(x*e + d)^2 + 2/3*(x*e + d)^3*b^2*g^2*n*e^(-3)*log(x*e + d)*log(c)
 - 2*(x*e + d)^2*b^2*d*g^2*n*e^(-3)*log(x*e + d)*log(c) + 2*(x*e + d)*b^2*d
^2*g^2*n*e^(-3)*log(x*e + d)*log(c) + 2/27*(x*e + d)^3*b^2*g^2*n^2*e^(-3) -
 1/2*(x*e + d)^2*b^2*d*g^2*n^2*e^(-3) + 2*(x*e + d)*b^2*d^2*g^2*n^2*e^(-3)
- (x*e + d)^2*b^2*f*g*n^2*e^(-2)*log(x*e + d) + 4*(x*e + d)*b^2*d*f*g*n^2*e
^(-2)*log(x*e + d) + 2/3*(x*e + d)^3*a*b*g^2*n*e^(-3)*log(x*e + d) - 2*(x*e
 + d)^2*a*b*d*g^2*n*e^(-3)*log(x*e + d) + 2*(x*e + d)*a*b*d^2*g^2*n*e^(-3)*
log(x*e + d) + (x*e + d)*b^2*f^2*n^2*e^(-1)*log(x*e + d)^2 - 2/9*(x*e + d)^
3*b^2*g^2*n*e^(-3)*log(c) + (x*e + d)^2*b^2*d*g^2*n*e^(-3)*log(c) - 2*(x*e
+ d)*b^2*d^2*g^2*n*e^(-3)*log(c) + 2*(x*e + d)^2*b^2*f*g*n*e^(-2)*log(x*e +
 d)*log(c) - 4*(x*e + d)*b^2*d*f*g*n*e^(-2)*log(x*e + d)*log(c) + 1/3*(x*e
+ d)^3*b^2*g^2*e^(-3)*log(c)^2 - (x*e + d)^2*b^2*d*g^2*e^(-3)*log(c)^2 + (x
*e + d)*b^2*d^2*g^2*e^(-3)*log(c)^2 + 1/2*(x*e + d)^2*b^2*f*g*n^2*e^(-2) -
4*(x*e + d)*b^2*d*f*g*n^2*e^(-2) - 2/9*(x*e + d)^3*a*b*g^2*n*e^(-3) + (x*e
+ d)^2*a*b*d*g^2*n*e^(-3) - 2*(x*e + d)*a*b*d^2*g^2*n*e^(-3) - 2*(x*e + d)*
b^2*f^2*n^2*e^(-1)*log(x*e + d) + 2*(x*e + d)^2*a*b*f*g*n*e^(-2)*log(x*e +
```

```
d) - 4*(x*e + d)*a*b*d*f*g*n*e^(-2)*log(x*e + d) - (x*e + d)^2*b^2*f*g*n*e^
(-2)*log(c) + 4*(x*e + d)*b^2*d*f*g*n*e^(-2)*log(c) + 2/3*(x*e + d)^3*a*b*g
^2*e^(-3)*log(c) - 2*(x*e + d)^2*a*b*d*g^2*e^(-3)*log(c) + 2*(x*e + d)*a*b*
d^2*g^2*e^(-3)*log(c) + 2*(x*e + d)*b^2*f^2*n*e^(-1)*log(x*e + d)*log(c) +
(x*e + d)^2*b^2*f*g*e^(-2)*log(c)^2 - 2*(x*e + d)*b^2*d*f*g*e^(-2)*log(c)^2
 + 2*(x*e + d)*b^2*f^2*n^2*e^(-1) - (x*e + d)^2*a*b*f*g*n*e^(-2) + 4*(x*e +
 d)*a*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a^2*g^2*e^(-3) - (x*e + d)^2*a^2*d
*g^2*e^(-3) + (x*e + d)*a^2*d^2*g^2*e^(-3) + 2*(x*e + d)*a*b*f^2*n*e^(-1)*l
og(x*e + d) - 2*(x*e + d)*b^2*f^2*n*e^(-1)*log(c) + 2*(x*e + d)^2*a*b*f*g*e
^(-2)*log(c) - 4*(x*e + d)*a*b*d*f*g*e^(-2)*log(c) + (x*e + d)*b^2*f^2*e^(-
1)*log(c)^2 - 2*(x*e + d)*a*b*f^2*n*e^(-1) + (x*e + d)^2*a^2*f*g*e^(-2) - 2
*(x*e + d)*a^2*d*f*g*e^(-2) + 2*(x*e + d)*a*b*f^2*e^(-1)*log(c) + (x*e + d)
*a^2*f^2*e^(-1)
```

3.46 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=186

$$\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2}$$

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

Rubi [A] time = 0.163694, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

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

Rule 2401

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rule 2390

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

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}\right)dx$$

$$=\frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{e}+\frac{(ef-dg)\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,d}{e}$$

$$=\frac{g\,\mathrm{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^2\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\int \left(a+b\log(c\right.\right.}{e^2}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2}$$

$$=-\frac{2ab(ef-dg)nx}{e}+\frac{b^2gn^2(d+ex)^2}{4e^2}-\frac{bgn(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2e^2}+\frac{(e}{}$$

$$=-\frac{2ab(ef-dg)nx}{e}+\frac{2b^2(ef-dg)n^2x}{e}+\frac{b^2gn^2(d+ex)^2}{4e^2}-\frac{2b^2(ef-dg)n(d+ex)}{e^2}$$

Mathematica [A] time = 0.0758791, size = 144, normalized size = 0.77

$$\frac{4(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-8bn(ef-dg)\left(ex(a-bn)+b(d+ex)\log\left(c(d+ex)^n\right)\right)+2g(d+ex)^2\left(a+b\log\right.}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (4*(e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 + 2*g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^2 - 8*b*(e*f - d*g)*n*(e*(a - b*n)*x + b*(d + e*x)*
Log[c*(d + e*x)^n]) + b*g*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a + b*Log
[c*(d + e*x)^n])))/(4*e^2)
```

Maple [C] time = 0.633, size = 2616, normalized size = 14.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] I/e*Pi*ln(e*x+d)*b^2*d*f*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I/e*Pi*ln(e*x+d)
*b^2*d*f*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*a^2*g*x^2+a^2*f*x+1/
4*b^2*g*n^2*x^2-1/2*a*b*g*n*x^2+ln(c)^2*b^2*f*x+1/2*ln(c)^2*b^2*g*x^2-1/2*b
*(I*Pi*b*e^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*I*Pi*b
*e^2*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*I*Pi*b*e^2*f*x*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2+2*I*Pi*b*e^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-I*Pi*b*e^2*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e^2*g*
x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*I*Pi*b*e^2*f*x*csgn(I*c*(e*x+
d)^n)^3+I*Pi*b*e^2*g*x^2*csgn(I*c*(e*x+d)^n)^3-2*ln(c)*b*e^2*g*x^2+b*e^2*g*
n*x^2-4*ln(c)*b*e^2*f*x-2*a*e^2*g*x^2+2*b*d^2*g*n*ln(e*x+d)-4*b*d*e*f*n*ln(
e*x+d)-2*b*d*e*g*n*x+4*b*e^2*f*n*x-4*a*e^2*f*x)/e^2*ln((e*x+d)^n)+1/2*b^2*x
*(g*x+2*f)*ln((e*x+d)^n)^2+2*b^2*f*n^2*x-1/4*Pi^2*b^2*f*x*csgn(I*c*(e*x+d)^
n)^6-1/2*ln(c)*b^2*g*n*x^2+ln(c)*a*b*g*x^2-2*ln(c)*b^2*f*n*x+2*ln(c)*a*b*f*
x-1/8*Pi^2*b^2*g*x^2*csgn(I*c*(e*x+d)^n)^6+1/e*a*b*d*g*n*x-1/e^2*ln(c)*ln(e
*x+d)*b^2*d^2*g*n+2/e*ln(c)*ln(e*x+d)*b^2*d*f*n+1/e*ln(c)*b^2*d*g*n*x-1/e^2
*ln(e*x+d)*a*b*d^2*g*n+2/e*ln(e*x+d)*a*b*d*f*n-1/8*Pi^2*b^2*g*x^2*csgn(I*c)
^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*b^2*g*x^2*csgn(I*c)^2
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*b^2*g*x^2*csgn(I*c)*csgn(
I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/2*Pi^2*b^2*g*x^2*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/4*Pi^2*b^2*f*x*csgn(I*c)^2*csgn(I*(e*x+d)^
n)^2*csgn(I*c*(e*x+d)^n)^2+1/2*Pi^2*b^2*f*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^3+1/2*Pi^2*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*
c*(e*x+d)^n)^3-Pi^2*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^4+I*Pi*b^2*f*n*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c*(
e*x+d)^n)^3+1/4*I*Pi*b^2*g*n*x^2*csgn(I*c*(e*x+d)^n)^3-I*ln(c)*Pi*b^2*f*x*c
sgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*a*b*g*x^2*csgn(I*c*(e*x+d)^n)^3-I*Pi*a*b*f*x*
csgn(I*c*(e*x+d)^n)^3+I*Pi*a*b*f*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*a*b
*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2-1/4*I*Pi*b^2*g*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I
*Pi*b^2*g*n*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*a*b*g*x^2*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2+1/2*I*Pi*a*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b^2*f*n
*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*a*b*f*n*x+1/2*I/e^2*Pi*ln(e*x+
d)*b^2*d^2*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/e*Pi*ln(e*
x+d)*b^2*d*f*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I/e*Pi*b
^2*d*g*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln(c)*Pi*b^2*f
*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(c)*Pi*b^2*f*x*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2-3/2/e*b^2*d*g*n^2*x+1/4*Pi^2*b^2*g*x^2*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^5-1/8*Pi^2*b^2*g*x^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4
+1/4*Pi^2*b^2*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4*Pi^2*b^2*f*
x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*Pi^2*b^2*f*x*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^5-1/4*Pi^2*b^2*f*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/2*Pi
^2*b^2*f*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+1/2/e^2*b^2*d^2*g*n^2*ln
(e*x+d)^2-1/e*b^2*d*f*n^2*ln(e*x+d)^2-1/8*Pi^2*b^2*g*x^2*csgn(I*c)^2*csgn(I
*c*(e*x+d)^n)^4+3/2/e^2*ln(e*x+d)*b^2*d^2*g*n^2-2/e*ln(e*x+d)*b^2*d*f*n^2-1
/2*I/e^2*Pi*ln(e*x+d)*b^2*d^2*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*P
i*b^2*d*g*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/e^2*Pi*ln(e*x+d)*b^2*d^
2*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b^2*d*g*n*x*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b^2*f*n*x*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)-1/2*I*ln(c)*Pi*b^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)+1/4*I*Pi*b^2*g*n*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)-I*ln(c)*Pi*b^2*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-1/2*I*Pi*a*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*
Pi*a*b*f*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/e^2*Pi*ln(
e*x+d)*b^2*d^2*g*n*csgn(I*c*(e*x+d)^n)^3-I/e*Pi*ln(e*x+d)*b^2*d*f*n*csgn(I*
c*(e*x+d)^n)^3-1/2*I/e*Pi*b^2*d*g*n*x*csgn(I*c*(e*x+d)^n)^3
```

Maxima [A] time = 1.23617, size = 424, normalized size = 2.28

$$\frac{1}{2}b^2gx^2\log\left((ex+d)^nc\right)^2 - 2\,abefn\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) - \frac{1}{2}\,abegn\left(\frac{2\,d^2\log(ex+d)}{e^3} + \frac{ex^2-2\,dx}{e^2}\right) + abgx^2\log\left((ex+d)^{\prime}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] time = 2.14151, size = 851, normalized size = 4.58

$$\left(b^2e^2gn^2 - 2\,abe^2gn + 2\,a^2e^2g\right)x^2 + 2\left(b^2e^2gn^2x^2 + 2\,b^2e^2fn^2x + \left(2\,b^2def - b^2d^2g\right)n^2\right)\log(ex+d)^2 + 2\left(b^2e^2gx^2 + 2\,b^2e^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 4.24247, size = 561, normalized size = 3.02

$$\begin{cases} a^2fx + \frac{a^2gx^2}{2} - \frac{abd^2gn\log(d+ex)}{e^2} + \frac{2abdfn\log(d+ex)}{e} + \frac{abdgnx}{e} + 2abfnx\log(d+ex) - 2abfnx + 2abfx\log(c) + abgnx^2\log(d \\ (a+b\log(cd^n))^2\left(fx + \frac{gx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

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

```
g*x**2*log(c) - b**2*d**2*g*n**2*log(d + e*x)**2/(2*e**2) + 3*b**2*d**2*g*n
**2*log(d + e*x)/(2*e**2) - b**2*d**2*g*n*log(c)*log(d + e*x)/e**2 + b**2*d
*f*n**2*log(d + e*x)**2/e - 2*b**2*d*f*n**2*log(d + e*x)/e + 2*b**2*d*f*n*l
og(c)*log(d + e*x)/e + b**2*d*g*n**2*x*log(d + e*x)/e - 3*b**2*d*g*n**2*x/(
2*e) + b**2*d*g*n*x*log(c)/e + b**2*f*n**2*x*log(d + e*x)**2 - 2*b**2*f*n**
2*x*log(d + e*x) + 2*b**2*f*n**2*x + 2*b**2*f*n*x*log(c)*log(d + e*x) - 2*b
**2*f*n*x*log(c) + b**2*f*x*log(c)**2 + b**2*g*n**2*x**2*log(d + e*x)**2/2
- b**2*g*n**2*x**2*log(d + e*x)/2 + b**2*g*n**2*x**2/4 + b**2*g*n*x**2*log(
c)*log(d + e*x) - b**2*g*n*x**2*log(c)/2 + b**2*g*x**2*log(c)**2/2, Ne(e, 0
)), ((a + b*log(c*d**n))**2*(f*x + g*x**2/2), True))
```

Giac [B] time = 1.31445, size = 803, normalized size = 4.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^2*g*n^2*e^(-2)*log(x*e + d)^2 - (x*e + d)*b^2*d*g*n^2*e^(
-2)*log(x*e + d)^2 - 1/2*(x*e + d)^2*b^2*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e
 + d)*b^2*d*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)*b^2*f*n^2*e^(-1)*log(x*e
+ d)^2 + (x*e + d)^2*b^2*g*n*e^(-2)*log(x*e + d)*log(c) - 2*(x*e + d)*b^2*d
*g*n*e^(-2)*log(x*e + d)*log(c) + 1/4*(x*e + d)^2*b^2*g*n^2*e^(-2) - 2*(x*e
 + d)*b^2*d*g*n^2*e^(-2) - 2*(x*e + d)*b^2*f*n^2*e^(-1)*log(x*e + d) + (x*e
 + d)^2*a*b*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*a*b*d*g*n*e^(-2)*log(x*e
+ d) - 1/2*(x*e + d)^2*b^2*g*n*e^(-2)*log(c) + 2*(x*e + d)*b^2*d*g*n*e^(-2)
*log(c) + 2*(x*e + d)*b^2*f*n*e^(-1)*log(x*e + d)*log(c) + 1/2*(x*e + d)^2*
b^2*g*e^(-2)*log(c)^2 - (x*e + d)*b^2*d*g*e^(-2)*log(c)^2 + 2*(x*e + d)*b^2
*f*n^2*e^(-1) - 1/2*(x*e + d)^2*a*b*g*n*e^(-2) + 2*(x*e + d)*a*b*d*g*n*e^(-
2) + 2*(x*e + d)*a*b*f*n*e^(-1)*log(x*e + d) - 2*(x*e + d)*b^2*f*n*e^(-1)*l
og(c) + (x*e + d)^2*a*b*g*e^(-2)*log(c) - 2*(x*e + d)*a*b*d*g*e^(-2)*log(c)
 + (x*e + d)*b^2*f*e^(-1)*log(c)^2 - 2*(x*e + d)*a*b*f*n*e^(-1) + 1/2*(x*e
+ d)^2*a^2*g*e^(-2) - (x*e + d)*a^2*d*g*e^(-2) + 2*(x*e + d)*a*b*f*e^(-1)*l
og(c) + (x*e + d)*a^2*f*e^(-1)
```

3.47 $\int (a+b\log (c(d+ex)^n))^2 \, dx$

Optimal. Leaf size=65

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

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

Rubi [A] time = 0.0386196, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

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

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0136311, size = 59, normalized size = 0.91

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e}-2bn\left(ax+\frac{b(d+ex)\log(c(d+ex)^n)}{e}-bnx\right)$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.076, size = 130, normalized size = 2.

$$xa^2+b^2x\left(\ln\left(ce^{n\ln(ex+d)}\right)\right)^2+\frac{b^2d\left(\ln\left(ce^{n\ln(ex+d)}\right)\right)^2}{e}+2b^2n^2x-2b^2nx\ln\left(ce^{n\ln(ex+d)}\right)-2\frac{\ln(ex+d)b^2dn^2}{e}+2ab\ln$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.2085, size = 177, normalized size = 2.72

$$-2\,aben\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+b^2x\log\left((ex+d)^nc\right)^2+2\,abx\log\left((ex+d)^nc\right)-\left(2\,en\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)\log\left((ex+d)^{\prime}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [B] time = 2.06996, size = 311, normalized size = 4.78

$$\frac{b^2ex\log(c)^2+\left(b^2en^2x+b^2dn^2\right)\log(ex+d)^2-2\left(b^2en-abe\right)x\log(c)+\left(2\,b^2en^2-2\,aben+a^2e\right)x-2\left(b^2dn^2-abdn\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
)/e
```

Sympy [A] time = 1.40749, size = 211, normalized size = 3.25

$$\begin{cases} a^2x + \frac{2abdn\log(d+ex)}{e} + 2abnx\log(d+ex) - 2abnx + 2abx\log(c) + \frac{b^2dn^2\log(d+ex)^2}{e} - \frac{2b^2dn^2\log(d+ex)}{e} + \frac{2b^2dn\log(c)\log(d+ex)}{e} - \\ x(a+b\log(cd^n))^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*x + 2*a*b*d*n*log(d + e*x)/e + 2*a*b*n*x*log(d + e*x) - 2*a
*b*n*x + 2*a*b*x*log(c) + b**2*d*n**2*log(d + e*x)**2/e - 2*b**2*d*n**2*log
(d + e*x)/e + 2*b**2*d*n*log(c)*log(d + e*x)/e + b**2*n**2*x*log(d + e*x)**
2 - 2*b**2*n**2*x*log(d + e*x) + 2*b**2*n**2*x + 2*b**2*n*x*log(c)*log(d +
e*x) - 2*b**2*n*x*log(c) + b**2*x*log(c)**2, Ne(e, 0)), (x*(a + b*log(c*d**
n))**2, True))
```

Giac [B] time = 1.16506, size = 240, normalized size = 3.69

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.48 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx} dx$

Optimal. Leaf size=111

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n)}{g}$$

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

Rubi [A] time = 0.113655, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2396, 2433, 2374, 6589}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n)}{g}$$

Antiderivative was successfully verified.

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

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

Rule 2396

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

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

, e, n, p}, x] && EqQ[b*d, a*e]

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2ben)\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\,dx,x,\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\,(a+b\log(c(d+ex)^n))\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{(2b}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\,(a+b\log(c(d+ex)^n))\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{2b^2}{}$$

Mathematica [A] time = 0.127128, size = 194, normalized size = 1.75

$$\frac{2bn\left(\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)(a+b\log(c(d+ex)^n)-bn\log(d+ex))+b^2n^2\left(-2\mathrm{PolyLog}\left(3,\frac{g(}{dg}\right.\right.}{}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.743, size = 2018, normalized size = 18.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+b^2*ln(g*(e*x+d)-d*g+f*e)/g*ln((e*x+d)^n)^2-1
/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6+I*ln(g*x+f)/g*ln(c)*Pi*b^2*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^
2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-
e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2-2/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*ln(c)+2*ln(g*x+
f)/g*ln(c)*a*b-2*b/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*a-I/g*n*dilog((
```

```
(g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*ln(g
*x+f)/g*ln((e*x+d)^n)*b^2*ln(c)+2*b*ln(g*x+f)/g*ln((e*x+d)^n)*a-2*b/g*n*ln(
g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*a+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2+b^2*n^2/g*ln(e*x+d)^2*ln(1-g/(d*g-e*f)*(e*x+d))+
2*b^2*n^2/g*ln(e*x+d)*polylog(2,g/(d*g-e*f)*(e*x+d))-2*b^2*n^2*dilog((g*(e*
x+d)-d*g+f*e)/(-d*g+e*f))/g*ln(e*x+d)-2*b^2*n^2*ln(e*x+d)^2*ln((g*(e*x+d)-d
*g+f*e)/(-d*g+e*f))/g-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)-I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b
^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+a^2*ln(g*x+f)/g-I*ln(g*x+f)/g
*Pi*a*b*csgn(I*c*(e*x+d)^n)^3-2*b^2*n^2/g*polylog(3,g/(d*g-e*f)*(e*x+d))+ln
(g*x+f)/g*ln(c)^2*b^2+I/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/g*n*ln(g*x+f)*ln(((g*x+f)*e+
d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/g*ln
(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*b^2*n*dilog((g
*(e*x+d)-d*g+f*e)/(-d*g+e*f))/g*ln((e*x+d)^n)+b^2*ln(g*(e*x+d)-d*g+f*e)/g*l
n(e*x+d)^2*n^2-I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-ln(g*x+f)/g
*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+1/2*ln(g*x+f)/g
*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-2/g*n*ln(g*x+
f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*ln(c)+I/g*n*dilog(((g*x+f)*e+d*g-f
*e)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I
*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn
(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-2*b^2*ln(g*(e*x+d)-d*g+f*
e)/g*ln((e*x+d)^n)*ln(e*x+d)*n+2*b^2*n*ln(e*x+d)*ln((g*(e*x+d)-d*g+f*e)/(-d
*g+e*f))/g*ln((e*x+d)^n)-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d
)^n)^3+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4
*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*ln(g*x+f)/g*Pi^
2*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+
d)^n)^2*csgn(I*c*(e*x+d)^n)^4
```

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

$$\frac{a^2 \log\left(gx+f\right)}{g} + \int \frac{b^2 \log\left(\left(ex+d\right)^n\right)^2 + b^2 \log\left(c\right)^2 + 2\,ab \log\left(c\right) + 2\left(b^2 \log\left(c\right) + ab\right) \log\left(\left(ex+d\right)^n\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\mathrm{integral}\left(\frac{b^2 \log\left(\left(ex+d\right)^n c\right)^2 + 2\,ab \log\left(\left(ex+d\right)^n c\right) + a^2}{gx+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(b\log\left(\left(ex + d\right)^{n}c\right) + a\right)^{2}}{gx + f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.49 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^2}\,dx$

Optimal. Leaf size=132

$$-\frac{2b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{2ben\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{(f+gx)(ef-dg)}$$

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

Rubi [A] time = 0.0883066, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2397, 2394, 2393, 2391}

$$-\frac{2b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{2ben\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{(f+gx)(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2397

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

Rule 2394

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

Rule 2393

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

Rule 2391

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

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^2}\,dx = \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{(2ben)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{2ben\,(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} + \frac{(2b^2e^2n^2}{g}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{2ben\,(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} + \frac{(2b^2en^2)}{}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{(ef-dg)(f+gx)} - \frac{2ben\,(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} - \frac{2b^2en^2\mathrm{L}}{g(e}$$

Mathematica [A] time = 0.0835671, size = 126, normalized size = 0.95

$$\frac{2b^2en^2(f+gx)\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-(a+b\log(c(d+ex)^n))\left(ag(d+ex)+bg(d+ex)\log(c(d+ex)^n)-2ben(f+gx)\log\right.}{g(f+gx)(dg-ef)}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.77, size = 1092, normalized size = 8.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -I/g*n*e/(d*g-e*f)*ln(g*x+f)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I/(g*x+f)/g*ln((e
*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/(g*x+f)/g*ln((e*x
+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-b^2/(g*x+f)/g*ln((e*x+d)^n)^2
+I/(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+I/g*n*e/(d*g-e*f)*ln(e*x+d)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-2*b/(g*x+f)
/g*ln((e*x+d)^n)*a-2/(g*x+f)/g*ln((e*x+d)^n)*b^2*ln(c)-1/4*(-I*b*Pi*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)
^n)^3+2*b*ln(c)+2*a)^2/(g*x+f)/g-2*b^2/g*n^2*e/(d*g-e*f)*ln(g*x+f)*ln(((g*x
+f)*e+d*g-f*e)/(d*g-e*f))-I/g*n*e/(d*g-e*f)*ln(e*x+d)*b^2*Pi*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-2*b^2/g*n^2*e/(d*g-e*f)*dilog(((g*x+f)*e+d*g-f*e)
/(d*g-e*f))+b^2/g*n^2*e/(d*g-e*f)*ln(e*x+d)^2+I/g*n*e/(d*g-e*f)*ln(g*x+f)*b
^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*b/g*n*e/(d*g-e*f)*ln(e*x+d)*a+I/g*n
*e/(d*g-e*f)*ln(g*x+f)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/g*n
*e/(d*g-e*f)*ln(e*x+d)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*b^2/g*n*e*l
n((e*x+d)^n)/(d*g-e*f)*ln(e*x+d)+2*b^2/g*n*e*ln((e*x+d)^n)/(d*g-e*f)*ln(g*x
+f)+2*b/g*n*e/(d*g-e*f)*ln(g*x+f)*a-2/g*n*e/(d*g-e*f)*ln(e*x+d)*b^2*ln(c)+2
```

```
/g*n*e/(d*g-e*f)*ln(g*x+f)*b^2*ln(c)-I/g*n*e/(d*g-e*f)*ln(g*x+f)*b^2*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/g*n*e/(d*g-e*f)*ln(e*x+d)*b^
2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/(g*x+f)/g*ln((e*x+d)
^n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3
```

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

$$2\,aben\left(\frac{\log(ex+d)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-b^2\left(\frac{\log\left((ex+d)^n\right)^2}{g^2x+fg}-\int\frac{egx\log(c)^2+dg\log(c)^2+2\left(efn+dg\log(c)+\left(egn\right.\right.}{eg^3x^3+df^2g+\left(2\,efg^2+dg^3\right)x^2+\left(e\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int\frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}{\left(f+gx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.50 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^3}\,dx$

Optimal. Leaf size=202

$$\frac{b^2e^2n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)}{g(ef-dg)^2}-\frac{be^2n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)^2}-\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(f+gx)(ef-dg)^2}-($$

```
[Out] -((b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)^2*(f + g*x))) -
 (a + b*Log[c*(d + e*x)^n])^2/(2*g*(f + g*x)^2) + (b^2*e^2*n^2*Log[f + g*x]
)/(g*(e*f - d*g)^2) - (b*e^2*n*(a + b*Log[c*(d + e*x)^n])*Log[1 + (e*f - d*
g)/(g*(d + e*x))])/(g*(e*f - d*g)^2) + (b^2*e^2*n^2*PolyLog[2, -((e*f - d*g
)/(g*(d + e*x)))])/(g*(e*f - d*g)^2)
```

Rubi [A] time = 0.38548, antiderivative size = 233, normalized size of antiderivative = 1.15, number of steps used = 9, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31}

$$-\frac{b^2e^2n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^2}+\frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^2}-\frac{be^2n\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)^2}-\frac{ben(d+ex)}{(f}$$

Antiderivative was successfully verified.

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

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

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

Rule 2301

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

Rule 2317

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

Rule 2391

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

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

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

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^3}\,dx = -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2} + \frac{(ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^2}\,dx}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2} + \frac{(bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx, x, d+ex\right)}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2} - \frac{(bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx, x, d+ex\right)}{ef-dg} + \frac{(ben)\,\mathrm{Subst}\left(\ldots\right.}{\ldots}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^2(f+gx)} - \frac{(a+b\log(c(d+ex)^n))^2}{2g(f+gx)^2} - \frac{(ben)\,\mathrm{Subst}\left(\int \frac{a+b\ldots}{ef\ldots}\right.}{(ef\ldots}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^2(f+gx)} + \frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^2} - \frac{(a+b\log(c(d+\ldots}{2g(f+gx\ldots}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^2(f+gx)} + \frac{e^2(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^2} - \frac{(a+b\log(c(d+\ldots}{2g(f+gx\ldots}$$

Mathematica [A] time = 0.216715, size = 204, normalized size = 1.01

$$\frac{\frac{e(f+gx)\left(-2b^2en^2(f+gx)\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+2bn(ef-dg)(a+b\log(c(d+ex)^n))-2ben(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+e(f+gx)(a+b\log(c(d+ex)^n))^2-2\ldots}{(ef-dg)^2}}{2g(f+gx)^2}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.759, size = 1473, normalized size = 7.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)^n)
^3+1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)-b/(g*x+f)^2/g*ln((e*x+d)^n)*a-1/(g*x+f)^2/g*ln((e*x+d)^n)*b^
2*ln(c)-1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+1/
2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-1/2*b^2/g*n^2*e^2/
```

```
(d*g-e*f)^2*ln(e*x+d)^2-b^2/g*n^2*e^2/(d*g-e*f)^2*ln(e*x+d)+b^2/g*n^2*e^2/(
d*g-e*f)^2*ln(g*x+f)-1/8*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/(g*x+f)^2/g
+b^2/g*n^2*e^2/(d*g-e*f)^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*
b^2/(g*x+f)^2/g*ln((e*x+d)^n)^2-1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2+b^2/g*n^2*e^2/(d*g-e*f)^2*dilog(((g*x+f)*e+d*g-
f*e)/(d*g-e*f))-1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2-1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2+b^2/g*n*e^2*ln((e*x+d)^n)/(d*g-e*f)^2*ln(e*x+d)-1/2*I/g*n*e^2/(
d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I/g*n*e^2/(
d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
+1/2*I/g*n*e/(d*g-e*f)/(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)-b^2/g*n*e*ln((e*x+d)^n)/(d*g-e*f)/(g*x+f)-b^2/g*n*e^2*ln((e*x+d)
^n)/(d*g-e*f)^2*ln(g*x+f)+b/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*a-b/g*n*e/(d*g-e*
f)/(g*x+f)*a-b/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*a+1/g*n*e^2/(d*g-e*f)^2*ln(e*x
+d)*b^2*ln(c)-1/g*n*e/(d*g-e*f)/(g*x+f)*b^2*ln(c)-1/g*n*e^2/(d*g-e*f)^2*ln(
g*x+f)*b^2*ln(c)+1/2*I/(g*x+f)^2/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c*(e*x+d)^n)
^3+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(e*x+d)*Pi*b^2*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2+1/2*I/g*n*e^2/(d*g-e*f)^2*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)
```

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

$$aben\left(\frac{e\log(ex+d)}{e^2f^2g-2\,defg^2+d^2g^3}-\frac{e\log\left(gx+f\right)}{e^2f^2g-2\,defg^2+d^2g^3}+\frac{1}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}\right)-\frac{1}{2}\,b^2\left(\frac{\log\left((ex+d)^n\right)^2}{g^3x^2+2\,fg^2x+f^2g}-2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="maxima")
```

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

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

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2}{g^3x^3+3\,fg^2x^2+3\,f^2gx+f^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="fricas")
```

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

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

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^3,x, algorithm="giac")
```

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

3.51 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^4}\,dx$

Optimal. Leaf size=317

$$\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)}{3g(ef-dg)^3}-\frac{2be^3n\log\left(\frac{ef-dg}{g(d+ex)}+1\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^3}-\frac{2be^2n(d+ex)(a+b\log(c(d+ex)^n))}{3(f+gx)(ef-dg)^3}+$$

```
[Out] -(b^2*e^2*n^2)/(3*g*(e*f - d*g)^2*(f + g*x)) - (b^2*e^3*n^2*Log[d + e*x])/(
3*g*(e*f - d*g)^3) + (b*e*n*(a + b*Log[c*(d + e*x)^n]))/(3*g*(e*f - d*g)*(f
 + g*x)^2) - (2*b*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*(e*f - d*g
)^3*(f + g*x)) - (a + b*Log[c*(d + e*x)^n])^2/(3*g*(f + g*x)^3) + (b^2*e^3*
n^2*Log[f + g*x])/(g*(e*f - d*g)^3) - (2*b*e^3*n*(a + b*Log[c*(d + e*x)^n])
*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(3*g*(e*f - d*g)^3) + (2*b^2*e^3*n^2*P
olyLog[2, -((e*f - d*g)/(g*(d + e*x)))])/(3*g*(e*f - d*g)^3)
```

Rubi [A] time = 0.604855, antiderivative size = 347, normalized size of antiderivative = 1.09, number of steps used = 13, number of rules used = 11, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.458, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$-\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{3g(ef-dg)^3}+\frac{e^3(a+b\log(c(d+ex)^n))^2}{3g(ef-dg)^3}-\frac{2be^3n\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^3}-\frac{2be^2n(d+e}{3(f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^4,x]
```

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

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

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

Rule 2301

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

Rule 2317

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

Rule 2391

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

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

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

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 44

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

Rule steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^4}\,dx = -\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} + \frac{(2ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^3}\,dx}{3g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} + \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{3g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} - \frac{(2bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{3(ef-dg)} + \frac{(2ben)\,\mathrm{Subst}\left(\int\right.}{3}$$

$$= \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2} - \frac{(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^3} - \frac{(2ben)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx,\right.}{3(ef-dg)^2}$$

$$= \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2} - \frac{2be^2n(d+ex)(a+b\log(c(d+ex)^n))}{3(ef-dg)^3(f+gx)} - \frac{(a+b\log(c(d+e}{3g(f+gx)^3}$$

$$= -\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)} - \frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3} + \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2} - \frac{2be^2n(d+}{3(}$$

$$= -\frac{b^2e^2n^2}{3g(ef-dg)^2(f+gx)} - \frac{b^2e^3n^2\log(d+ex)}{3g(ef-dg)^3} + \frac{ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)(f+gx)^2} - \frac{2be^2n(d+}{3(}$$

Mathematica [A] time = 0.376461, size = 302, normalized size = 0.95

$$\frac{e(f+gx)\left(-2b^2e^2n^2(f+gx)^2\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+e^2(f+gx)^2(a+b\log(c(d+ex)^n))^2-2be^2n(f+gx)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+bn(ef-dg)^2(a+b\log(c(d+ex)^n))\right.}{(ef-dg)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^4,x]
```

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

Maple [C] time = 0.743, size = 1815, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^4,x)
```

```
[Out] -1/12*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I
*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/(g*x+f)^3/g-1/3*I/g*n*e^2/(d*g
-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-2/3*b/(g*x+f)^3/g*ln((e*x+d)^n
)*a-2/3/(g*x+f)^3/g*ln((e*x+d)^n)*b^2*ln(c)+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(e*
x+d)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*cs
gn(I*c*(e*x+d)^n)^3-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*c*(e*
x+d)^n)^3+1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)-2/3*b^2/g*n^2*e^3/(d*g-e*f)^3*ln(g*x+f)*ln(((g*x+f)*e
+d*g-f*e)/(d*g-e*f))-1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-1/3*b^2/(g*x+f)^3/g*ln((e*x+d)^n)^2+b^2/g*n^2*e^3/(d*g-e
*f)^3*ln(e*x+d)-1/3*b^2/g*n^2*e^2/(d*g-e*f)^2/(g*x+f)-2/3*b^2/g*n*e^3*ln((e
*x+d)^n)/(d*g-e*f)^3*ln(e*x+d)-1/3*b^2/g*n*e*ln((e*x+d)^n)/(d*g-e*f)/(g*x+f
)^2+2/3*b^2/g*n*e^3*ln((e*x+d)^n)/(d*g-e*f)^3*ln(g*x+f)+2/3*b^2/g*n*e^2*ln(
(e*x+d)^n)/(d*g-e*f)^2/(g*x+f)+1/3*I/(g*x+f)^3/g*ln((e*x+d)^n)*Pi*b^2*csgn(
I*c*(e*x+d)^n)^3-1/3*I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I/g*n*e/(d*g-e*f)/(g*x+f
)^2*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I/g*n*e/(d*g
-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*I/g*n*e^
3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3*I/g*n*e^
3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/3*I/g*n*e^
3/(d*g-e*f)^3*ln(e*x+d)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*
I/g*n*e^2/(d*g-e*f)^2/(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2-2/3*b^2/g*n^2*e^3/(d*g-e*f)^3*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b^2/g*
n^2*e^3/(d*g-e*f)^3*ln(g*x+f)+1/3*b^2/g*n^2*e^3/(d*g-e*f)^3*ln(e*x+d)^2-1/3
*b/g*n*e/(d*g-e*f)/(g*x+f)^2*a+2/3*b/g*n*e^2/(d*g-e*f)^2/(g*x+f)*a-2/3*b/g*
n*e^3/(d*g-e*f)^3*ln(e*x+d)*a+2/3*b/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*a-1/3/g*n
*e/(d*g-e*f)/(g*x+f)^2*b^2*ln(c)+2/3/g*n*e^2/(d*g-e*f)^2/(g*x+f)*b^2*ln(c)-
2/3/g*n*e^3/(d*g-e*f)^3*ln(e*x+d)*b^2*ln(c)+2/3/g*n*e^3/(d*g-e*f)^3*ln(g*x+
f)*b^2*ln(c)-1/6*I/g*n*e/(d*g-e*f)/(g*x+f)^2*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2+1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2-1/3*I/g*n*e^3/(d*g-e*f)^3*ln(g*x+f)*Pi*b^2*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
```

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

$$\frac{1}{3}\left(\frac{2\,e^2\log\left(ex+d\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}-\frac{2\,e^2\log\left(gx+f\right)}{e^3f^3g-3\,de^2f^2g^2+3\,d^2efg^3-d^3g^4}+\frac{}{e^2f^4g-2\,def^3g^2+d^2f^2g^3+\left(e^2f^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="maxima")
```

```
[Out] 1/3*(2*e^2*log(e*x + d)/(e^3*f^3*g - 3*d*e^2*f^2*g^2 + 3*d^2*e*f*g^3 - d^3*
g^4) - 2*e^2*log(g*x + f)/(e^3*f^3*g - 3*d*e^2*f^2*g^2 + 3*d^2*e*f*g^3 - d^
3*g^4) + (2*e*g*x + 3*e*f - d*g)/(e^2*f^4*g - 2*d*e*f^3*g^2 + d^2*f^2*g^3 +
 (e^2*f^2*g^3 - 2*d*e*f*g^4 + d^2*g^5)*x^2 + 2*(e^2*f^3*g^2 - 2*d*e*f^2*g^3
 + d^2*f*g^4)*x))*a*b*e*n - 1/3*b^2*(log((e*x + d)^n)^2/(g^4*x^3 + 3*f*g^3*
x^2 + 3*f^2*g^2*x + f^3*g) - 3*integrate(1/3*(3*e*g*x*log(c)^2 + 3*d*g*log(
c)^2 + 2*(e*f*n + 3*d*g*log(c) + (e*g*n + 3*e*g*log(c))*x)*log((e*x + d)^n)
)/(e*g^5*x^5 + d*f^4*g + (4*e*f*g^4 + d*g^5)*x^4 + 2*(3*e*f^2*g^3 + 2*d*f*g
^4)*x^3 + 2*(2*e*f^3*g^2 + 3*d*f^2*g^3)*x^2 + (e*f^4*g + 4*d*f^3*g^2)*x), x
)) - 2/3*a*b*log((e*x + d)^n*c)/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*
```

```
g) - 1/3*a^2/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x + f^3*g)
```

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

$$\text{integral}\left(\frac{b^2 \log\left((ex+d)^n c\right)^2 + 2\,ab \log\left((ex+d)^n c\right) + a^2}{g^4x^4 + 4\,fg^3x^3 + 6\,f^2g^2x^2 + 4\,f^3gx + f^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^4*x
^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2 + 4*f^3*g*x + f^4), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**4,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b \log\left((ex+d)^n c\right) + a\right)^2}{\left(gx+f\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^4, x)
```

3.52 $\int (f+gx)^3 (a+b\log(c(d+ex)^n))^3 \, dx$

Optimal. Leaf size=598

$$\frac{2b^2g^2n^2(d+ex)^3(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^4}+\frac{9b^2gn^2(d+ex)^2(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^4}+\frac{3b^2g^3n^2(d+$$

```
[Out] (6*a*b^2*(e*f - d*g)^3*n^2*x)/e^3 - (6*b^3*(e*f - d*g)^3*n^3*x)/e^3 - (9*b^
3*g*(e*f - d*g)^2*n^3*(d + e*x)^2)/(8*e^4) - (2*b^3*g^2*(e*f - d*g)*n^3*(d
+ e*x)^3)/(9*e^4) - (3*b^3*g^3*n^3*(d + e*x)^4)/(128*e^4) + (6*b^3*(e*f - d
*g)^3*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^4 + (9*b^2*g*(e*f - d*g)^2*n^2*(d
 + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*
(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4) + (3*b^2*g^3*n^2*(d + e*x)^
4*(a + b*Log[c*(d + e*x)^n]))/(32*e^4) - (3*b*(e*f - d*g)^3*n*(d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/e^4 - (9*b*g*(e*f - d*g)^2*n*(d + e*x)^2*(a + b*
Log[c*(d + e*x)^n])^2)/(4*e^4) - (b*g^2*(e*f - d*g)*n*(d + e*x)^3*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^4 - (3*b*g^3*n*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n]
)^2)/(16*e^4) + ((e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e^4
+ (3*g*(e*f - d*g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(2*e^4) + (g
^2*(e*f - d*g)*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/e^4 + (g^3*(d + e*
x)^4*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^4)
```

Rubi [A] time = 0.552067, antiderivative size = 598, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{2b^2g^2n^2(d+ex)^3(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^4}+\frac{9b^2gn^2(d+ex)^2(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^4}+\frac{3b^2g^3n^2(d+$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^3,x]
```


```
[Out] (6*a*b^2*(e*f - d*g)^3*n^2*x)/e^3 - (6*b^3*(e*f - d*g)^3*n^3*x)/e^3 - (9*b^
3*g*(e*f - d*g)^2*n^3*(d + e*x)^2)/(8*e^4) - (2*b^3*g^2*(e*f - d*g)*n^3*(d
+ e*x)^3)/(9*e^4) - (3*b^3*g^3*n^3*(d + e*x)^4)/(128*e^4) + (6*b^3*(e*f - d
*g)^3*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^4 + (9*b^2*g*(e*f - d*g)^2*n^2*(d
 + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^4) + (2*b^2*g^2*(e*f - d*g)*n^2*
(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4) + (3*b^2*g^3*n^2*(d + e*x)^
4*(a + b*Log[c*(d + e*x)^n]))/(32*e^4) - (3*b*(e*f - d*g)^3*n*(d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/e^4 - (9*b*g*(e*f - d*g)^2*n*(d + e*x)^2*(a + b*
Log[c*(d + e*x)^n])^2)/(4*e^4) - (b*g^2*(e*f - d*g)*n*(d + e*x)^3*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^4 - (3*b*g^3*n*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n]
)^2)/(16*e^4) + ((e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e^4
+ (3*g*(e*f - d*g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(2*e^4) + (g
^2*(e*f - d*g)*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/e^4 + (g^3*(d + e*
x)^4*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^4)
```


Rule 2401

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rule 2390

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

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int (f+gx)^3 (a+b\log(c(d+ex)^n))^3 \, dx = \int \left(\frac{(ef-dg)^3 (a+b\log(c(d+ex)^n))^3}{e^3} + \frac{3g(ef-dg)^2(d+ex)(a+b\log(c(d+\right.$$

$$= \frac{g^3 \int (d+ex)^3 (a+b\log(c(d+ex)^n))^3 \, dx}{e^3} + \frac{\left(3g^2(ef-dg)\right) \int (d+ex)^2 (a+b\log\right.}{e^3}$$

$$= \frac{g^3 \operatorname{Subst}\left(\int x^3 (a+b\log(cx^n))^3 \, dx, x, d+ex\right)}{e^4} + \frac{\left(3g^2(ef-dg)\right) \operatorname{Subst}\left(\int x^2 (\right.}{e}$$

$$= \frac{(ef-dg)^3(d+ex)(a+b\log(c(d+ex)^n))^3}{e^4} + \frac{3g(ef-dg)^2(d+ex)^2(a+b\log(}{2e^4}$$

$$= -\frac{3b(ef-dg)^3n(d+ex)(a+b\log(c(d+ex)^n))^2}{e^4} - \frac{9bg(ef-dg)^2n(d+ex)^2(a}{4e^4}$$

$$= \frac{6ab^2(ef-dg)^3n^2x}{e^3} - \frac{9b^3g(ef-dg)^2n^3(d+ex)^2}{8e^4} - \frac{2b^3g^2(ef-dg)n^3(d+ex)^3}{9e^4}$$

$$= \frac{6ab^2(ef-dg)^3n^2x}{e^3} - \frac{6b^3(ef-dg)^3n^3x}{e^3} - \frac{9b^3g(ef-dg)^2n^3(d+ex)^2}{8e^4} - \frac{2b^3g^2(e}{}$$

Mathematica [A] time = 0.408771, size = 475, normalized size = 0.79

$$\frac{-128bg^2n(ef-dg)\left(2bn\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3(a+b\log(c(d+ex)^n))\right)+9(d+ex)^3(a+b\log(c(d+ex)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (1152*(e*f - d*g)^3*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3 + 1728*g*(e*f -
d*g)^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3 + 1152*g^2*(e*f - d*g)*(d +
 e*x)^3*(a + b*Log[c*(d + e*x)^n])^3 + 288*g^3*(d + e*x)^4*(a + b*Log[c*(d
+ e*x)^n])^3 - 3456*b*(e*f - d*g)^3*n*((d + e*x)*(a + b*Log[c*(d + e*x)^n])
^2 - 2*b*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n])) - 1296*b*g*(e*
f - d*g)^2*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + b*n*(b*e*n*x*(2*
d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))) - 128*b*g^2*(e*f - d*
g)*n*(9*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^2 + 2*b*n*(b*e*n*x*(3*d^2 +
3*d*e*x + e^2*x^2) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))) - 27*b*g^3*
n*(8*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n])^2 + b*n*(b*e*n*x*(4*d^3 + 6*d^2
*e*x + 4*d*e^2*x^2 + e^3*x^3) - 4*(d + e*x)^4*(a + b*Log[c*(d + e*x)^n]))))
/(1152*e^4)
```

Maple [C] time = 2.204, size = 30495, normalized size = 51.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^3,x)
```

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

Maxima [B] time = 1.55404, size = 2277, normalized size = 3.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*b^3*g^3*x^4*log((e*x + d)^n*c)^3 + 3/4*a*b^2*g^3*x^4*log((e*x + d)^n*c)
^2 + b^3*f*g^2*x^3*log((e*x + d)^n*c)^3 + 3/4*a^2*b*g^3*x^4*log((e*x + d)^n
*c) + 3*a*b^2*f*g^2*x^3*log((e*x + d)^n*c)^2 + 3/2*b^3*f^2*g*x^2*log((e*x +
 d)^n*c)^3 + 1/4*a^3*g^3*x^4 + 3*a^2*b*f*g^2*x^3*log((e*x + d)^n*c) + 9/2*a
*b^2*f^2*g*x^2*log((e*x + d)^n*c)^2 + b^3*f^3*x*log((e*x + d)^n*c)^3 + a^3*
f*g^2*x^3 - 3*a^2*b*e*f^3*n*(x/e - d*log(e*x + d)/e^2) - 1/16*a^2*b*e*g^3*n
*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^3
*x)/e^4) + 1/2*a^2*b*e*f*g^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e
*x^2 + 6*d^2*x)/e^3) - 9/4*a^2*b*e*f^2*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2
 - 2*d*x)/e^2) + 9/2*a^2*b*f^2*g*x^2*log((e*x + d)^n*c) + 3*a*b^2*f^3*x*log
((e*x + d)^n*c)^2 + 3/2*a^3*f^2*g*x^2 + 3*a^2*b*f^3*x*log((e*x + d)^n*c) -
3*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2
- 2*e*x + 2*d*log(e*x + d))*n^2/e)*a*b^2*f^3 - (3*e*n*(x/e - d*log(e*x + d)
/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 -
6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e
*x + d))*n*log((e*x + d)^n*c)/e^2))*b^3*f^3 - 9/4*(2*e*n*(2*d^2*log(e*x + d
)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x
+ d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e^2)*a*b^2*f^2*g - 3/8*(6*e*n*(2
*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c)^2 + e*n*((4
```

```
*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*x + d)^2 - 42*d*e*x + 42*d^2
*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^
2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3*f^2*g + 1/6*(6*e*n*(6*d^3*lo
g(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c)
+ (4*e^3*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*l
og(e*x + d))*n^2/e^3)*a*b^2*f*g^2 + 1/36*(18*e*n*(6*d^3*log(e*x + d)/e^4 -
(2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c)^2 - e*n*((8*e^3*x
^3 - 36*d^3*log(e*x + d)^3 - 57*d*e^2*x^2 - 198*d^3*log(e*x + d)^2 + 510*d^
2*e*x - 510*d^3*log(e*x + d))*n^2/e^4 - 6*(4*e^3*x^3 - 15*d*e^2*x^2 - 18*d^
3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n*log((e*x + d)^n*c)/e
^4))*b^3*f*g^2 - 1/96*(12*e*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e
^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4)*log((e*x + d)^n*c) - (9*e^4*x^4 - 28*
d*e^3*x^3 + 78*d^2*e^2*x^2 + 72*d^4*log(e*x + d)^2 - 300*d^3*e*x + 300*d^4*
log(e*x + d))*n^2/e^4)*a*b^2*g^3 - 1/1152*(72*e*n*(12*d^4*log(e*x + d)/e^5
+ (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^3*x)/e^4)*log((e*x + d)^n*c
)^2 + e*n*((27*e^4*x^4 - 148*d*e^3*x^3 + 288*d^4*log(e*x + d)^3 + 690*d^2*e
^2*x^2 + 1800*d^4*log(e*x + d)^2 - 4980*d^3*e*x + 4980*d^4*log(e*x + d))*n^
2/e^5 - 12*(9*e^4*x^4 - 28*d*e^3*x^3 + 78*d^2*e^2*x^2 + 72*d^4*log(e*x + d)
^2 - 300*d^3*e*x + 300*d^4*log(e*x + d))*n*log((e*x + d)^n*c)/e^5))*b^3*g^3
 + a^3*f^3*x
```

Fricas [B] time = 3.07314, size = 5723, normalized size = 9.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/1152*(9*(3*b^3*e^4*g^3*n^3 - 12*a*b^2*e^4*g^3*n^2 + 24*a^2*b*e^4*g^3*n -
 32*a^3*e^4*g^3)*x^4 - 4*(288*a^3*e^4*f*g^2 - (64*b^3*e^4*f*g^2 - 37*b^3*d*
e^3*g^3)*n^3 + 12*(16*a*b^2*e^4*f*g^2 - 7*a*b^2*d*e^3*g^3)*n^2 - 72*(4*a^2*
b*e^4*f*g^2 - a^2*b*d*e^3*g^3)*n)*x^3 - 288*(b^3*e^4*g^3*n^3*x^4 + 4*b^3*e^
4*f*g^2*n^3*x^3 + 6*b^3*e^4*f^2*g*n^3*x^2 + 4*b^3*e^4*f^3*n^3*x + (4*b^3*d*
e^3*f^3 - 6*b^3*d^2*e^2*f^2*g + 4*b^3*d^3*e*f*g^2 - b^3*d^4*g^3)*n^3)*log(e
*x + d)^3 - 288*(b^3*e^4*g^3*x^4 + 4*b^3*e^4*f*g^2*x^3 + 6*b^3*e^4*f^2*g*x^
2 + 4*b^3*e^4*f^3*x)*log(c)^3 - 6*(288*a^3*e^4*f^2*g - (216*b^3*e^4*f^2*g -
 304*b^3*d*e^3*f*g^2 + 115*b^3*d^2*e^2*g^3)*n^3 + 12*(36*a*b^2*e^4*f^2*g -
40*a*b^2*d*e^3*f*g^2 + 13*a*b^2*d^2*e^2*g^3)*n^2 - 72*(6*a^2*b*e^4*f^2*g -
4*a^2*b*d*e^3*f*g^2 + a^2*b*d^2*e^2*g^3)*n)*x^2 + 72*(3*(b^3*e^4*g^3*n^3 -
4*a*b^2*e^4*g^3*n^2)*x^4 + (48*b^3*d*e^3*f^3 - 108*b^3*d^2*e^2*f^2*g + 88*b
^3*d^3*e*f*g^2 - 25*b^3*d^4*g^3)*n^3 - 4*(12*a*b^2*e^4*f*g^2*n^2 - (4*b^3*e
^4*f*g^2 - b^3*d*e^3*g^3)*n^3)*x^3 - 12*(4*a*b^2*d*e^3*f^3 - 6*a*b^2*d^2*e^
2*f^2*g + 4*a*b^2*d^3*e*f*g^2 - a*b^2*d^4*g^3)*n^2 - 6*(12*a*b^2*e^4*f^2*g*
n^2 - (6*b^3*e^4*f^2*g - 4*b^3*d*e^3*f*g^2 + b^3*d^2*e^2*g^3)*n^3)*x^2 - 12
*(4*a*b^2*e^4*f^3*n^2 - (4*b^3*e^4*f^3 - 6*b^3*d*e^3*f^2*g + 4*b^3*d^2*e^2*
f*g^2 - b^3*d^3*e*g^3)*n^3)*x - 12*(b^3*e^4*g^3*n^2*x^4 + 4*b^3*e^4*f*g^2*n
^2*x^3 + 6*b^3*e^4*f^2*g*n^2*x^2 + 4*b^3*e^4*f^3*n^2*x + (4*b^3*d*e^3*f^3 -
 6*b^3*d^2*e^2*f^2*g + 4*b^3*d^3*e*f*g^2 - b^3*d^4*g^3)*n^2)*log(c))*log(e*
x + d)^2 + 72*(3*(b^3*e^4*g^3*n - 4*a*b^2*e^4*g^3)*x^4 - 4*(12*a*b^2*e^4*f*
g^2 - (4*b^3*e^4*f*g^2 - b^3*d*e^3*g^3)*n)*x^3 - 6*(12*a*b^2*e^4*f^2*g - (6
*b^3*e^4*f^2*g - 4*b^3*d*e^3*f*g^2 + b^3*d^2*e^2*g^3)*n)*x^2 - 12*(4*a*b^2*
e^4*f^3 - (4*b^3*e^4*f^3 - 6*b^3*d*e^3*f^2*g + 4*b^3*d^2*e^2*f*g^2 - b^3*d^
3*e*g^3)*n)*x)*log(c)^2 - 12*(96*a^3*e^4*f^3 - (576*b^3*e^4*f^3 - 1512*b^3*
d*e^3*f^2*g + 1360*b^3*d^2*e^2*f*g^2 - 415*b^3*d^3*e*g^3)*n^3 + 12*(48*a*b^
2*e^4*f^3 - 108*a*b^2*d*e^3*f^2*g + 88*a*b^2*d^2*e^2*f*g^2 - 25*a*b^2*d^3*e
*g^3)*n^2 - 72*(4*a^2*b*e^4*f^3 - 6*a^2*b*d*e^3*f^2*g + 4*a^2*b*d^2*e^2*f*g
```

```
^2 - a^2*b*d^3*e*g^3)*n)*x - 12*(9*(b^3*e^4*g^3*n^3 - 4*a*b^2*e^4*g^3*n^2 +
 8*a^2*b*e^4*g^3*n)*x^4 + (576*b^3*d*e^3*f^3 - 1512*b^3*d^2*e^2*f^2*g + 136
0*b^3*d^3*e*f*g^2 - 415*b^3*d^4*g^3)*n^3 + 4*(72*a^2*b*e^4*f*g^2*n + (16*b^
3*e^4*f*g^2 - 7*b^3*d*e^3*g^3)*n^3 - 12*(4*a*b^2*e^4*f*g^2 - a*b^2*d*e^3*g^
3)*n^2)*x^3 - 12*(48*a*b^2*d*e^3*f^3 - 108*a*b^2*d^2*e^2*f^2*g + 88*a*b^2*d
^3*e*f*g^2 - 25*a*b^2*d^4*g^3)*n^2 + 6*(72*a^2*b*e^4*f^2*g*n + (36*b^3*e^4*
f^2*g - 40*b^3*d*e^3*f*g^2 + 13*b^3*d^2*e^2*g^3)*n^3 - 12*(6*a*b^2*e^4*f^2*
g - 4*a*b^2*d*e^3*f*g^2 + a*b^2*d^2*e^2*g^3)*n^2)*x^2 + 72*(b^3*e^4*g^3*n*x
^4 + 4*b^3*e^4*f*g^2*n*x^3 + 6*b^3*e^4*f^2*g*n*x^2 + 4*b^3*e^4*f^3*n*x + (4
*b^3*d*e^3*f^3 - 6*b^3*d^2*e^2*f^2*g + 4*b^3*d^3*e*f*g^2 - b^3*d^4*g^3)*n)*
log(c)^2 + 72*(4*a^2*b*d*e^3*f^3 - 6*a^2*b*d^2*e^2*f^2*g + 4*a^2*b*d^3*e*f*
g^2 - a^2*b*d^4*g^3)*n + 12*(24*a^2*b*e^4*f^3*n + (48*b^3*e^4*f^3 - 108*b^3
*d*e^3*f^2*g + 88*b^3*d^2*e^2*f*g^2 - 25*b^3*d^3*e*g^3)*n^3 - 12*(4*a*b^2*e
^4*f^3 - 6*a*b^2*d*e^3*f^2*g + 4*a*b^2*d^2*e^2*f*g^2 - a*b^2*d^3*e*g^3)*n^2
)*x - 12*(3*(b^3*e^4*g^3*n^2 - 4*a*b^2*e^4*g^3*n)*x^4 - 4*(12*a*b^2*e^4*f*g
^2*n - (4*b^3*e^4*f*g^2 - b^3*d*e^3*g^3)*n^2)*x^3 + (48*b^3*d*e^3*f^3 - 108
*b^3*d^2*e^2*f^2*g + 88*b^3*d^3*e*f*g^2 - 25*b^3*d^4*g^3)*n^2 - 6*(12*a*b^2
*e^4*f^2*g*n - (6*b^3*e^4*f^2*g - 4*b^3*d*e^3*f*g^2 + b^3*d^2*e^2*g^3)*n^2)
*x^2 - 12*(4*a*b^2*d*e^3*f^3 - 6*a*b^2*d^2*e^2*f^2*g + 4*a*b^2*d^3*e*f*g^2
- a*b^2*d^4*g^3)*n - 12*(4*a*b^2*e^4*f^3*n - (4*b^3*e^4*f^3 - 6*b^3*d*e^3*f
^2*g + 4*b^3*d^2*e^2*f*g^2 - b^3*d^3*e*g^3)*n^2)*x)*log(c))*log(e*x + d) -
12*(9*(b^3*e^4*g^3*n^2 - 4*a*b^2*e^4*g^3*n + 8*a^2*b*e^4*g^3)*x^4 + 4*(72*a
^2*b*e^4*f*g^2 + (16*b^3*e^4*f*g^2 - 7*b^3*d*e^3*g^3)*n^2 - 12*(4*a*b^2*e^4
*f*g^2 - a*b^2*d*e^3*g^3)*n)*x^3 + 6*(72*a^2*b*e^4*f^2*g + (36*b^3*e^4*f^2*
g - 40*b^3*d*e^3*f*g^2 + 13*b^3*d^2*e^2*g^3)*n^2 - 12*(6*a*b^2*e^4*f^2*g -
4*a*b^2*d*e^3*f*g^2 + a*b^2*d^2*e^2*g^3)*n)*x^2 + 12*(24*a^2*b*e^4*f^3 + (4
8*b^3*e^4*f^3 - 108*b^3*d*e^3*f^2*g + 88*b^3*d^2*e^2*f*g^2 - 25*b^3*d^3*e*g
^3)*n^2 - 12*(4*a*b^2*e^4*f^3 - 6*a*b^2*d*e^3*f^2*g + 4*a*b^2*d^2*e^2*f*g^2
 - a*b^2*d^3*e*g^3)*n)*x)*log(c))/e^4
```

Sympy [A] time = 50.5034, size = 4495, normalized size = 7.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f**3*x + 3*a**3*f**2*g*x**2/2 + a**3*f*g**2*x**3 + a**3*g**
3*x**4/4 - 3*a**2*b*d**4*g**3*n*log(d + e*x)/(4*e**4) + 3*a**2*b*d**3*f*g**
2*n*log(d + e*x)/e**3 + 3*a**2*b*d**3*g**3*n*x/(4*e**3) - 9*a**2*b*d**2*f**
2*g*n*log(d + e*x)/(2*e**2) - 3*a**2*b*d**2*f*g**2*n*x/e**2 - 3*a**2*b*d**2
*g**3*n*x**2/(8*e**2) + 3*a**2*b*d*f**3*n*log(d + e*x)/e + 9*a**2*b*d*f**2*
g*n*x/(2*e) + 3*a**2*b*d*f*g**2*n*x**2/(2*e) + a**2*b*d*g**3*n*x**3/(4*e) +
 3*a**2*b*f**3*n*x*log(d + e*x) - 3*a**2*b*f**3*n*x + 3*a**2*b*f**3*x*log(c
) + 9*a**2*b*f**2*g*n*x**2*log(d + e*x)/2 - 9*a**2*b*f**2*g*n*x**2/4 + 9*a*
*2*b*f**2*g*x**2*log(c)/2 + 3*a**2*b*f*g**2*n*x**3*log(d + e*x) - a**2*b*f*
g**2*n*x**3 + 3*a**2*b*f*g**2*x**3*log(c) + 3*a**2*b*g**3*n*x**4*log(d + e*
x)/4 - 3*a**2*b*g**3*n*x**4/16 + 3*a**2*b*g**3*x**4*log(c)/4 - 3*a*b**2*d**
4*g**3*n**2*log(d + e*x)**2/(4*e**4) + 25*a*b**2*d**4*g**3*n**2*log(d + e*x
)/(8*e**4) - 3*a*b**2*d**4*g**3*n*log(c)*log(d + e*x)/(2*e**4) + 3*a*b**2*d
**3*f*g**2*n**2*log(d + e*x)**2/e**3 - 11*a*b**2*d**3*f*g**2*n**2*log(d + e
*x)/e**3 + 6*a*b**2*d**3*f*g**2*n*log(c)*log(d + e*x)/e**3 + 3*a*b**2*d**3*
g**3*n**2*x*log(d + e*x)/(2*e**3) - 25*a*b**2*d**3*g**3*n**2*x/(8*e**3) + 3
*a*b**2*d**3*g**3*n*x*log(c)/(2*e**3) - 9*a*b**2*d**2*f**2*g*n**2*log(d + e
*x)**2/(2*e**2) + 27*a*b**2*d**2*f**2*g*n**2*log(d + e*x)/(2*e**2) - 9*a*b*
*2*d**2*f**2*g*n*log(c)*log(d + e*x)/e**2 - 6*a*b**2*d**2*f*g**2*n**2*x*log
```

```
(d + e*x)/e**2 + 11*a*b**2*d**2*f*g**2*n**2*x/e**2 - 6*a*b**2*d**2*f*g**2*n
*x*log(c)/e**2 - 3*a*b**2*d**2*g**3*n**2*x**2*log(d + e*x)/(4*e**2) + 13*a*
b**2*d**2*g**3*n**2*x**2/(16*e**2) - 3*a*b**2*d**2*g**3*n*x**2*log(c)/(4*e*
*2) + 3*a*b**2*d*f**3*n**2*log(d + e*x)**2/e - 6*a*b**2*d*f**3*n**2*log(d +
 e*x)/e + 6*a*b**2*d*f**3*n*log(c)*log(d + e*x)/e + 9*a*b**2*d*f**2*g*n**2*
x*log(d + e*x)/e - 27*a*b**2*d*f**2*g*n**2*x/(2*e) + 9*a*b**2*d*f**2*g*n*x*
log(c)/e + 3*a*b**2*d*f*g**2*n**2*x**2*log(d + e*x)/e - 5*a*b**2*d*f*g**2*n
**2*x**2/(2*e) + 3*a*b**2*d*f*g**2*n*x**2*log(c)/e + a*b**2*d*g**3*n**2*x**
3*log(d + e*x)/(2*e) - 7*a*b**2*d*g**3*n**2*x**3/(24*e) + a*b**2*d*g**3*n*x
**3*log(c)/(2*e) + 3*a*b**2*f**3*n**2*x*log(d + e*x)**2 - 6*a*b**2*f**3*n**
2*x*log(d + e*x) + 6*a*b**2*f**3*n**2*x + 6*a*b**2*f**3*n*x*log(c)*log(d +
e*x) - 6*a*b**2*f**3*n*x*log(c) + 3*a*b**2*f**3*x*log(c)**2 + 9*a*b**2*f**2
*g*n**2*x**2*log(d + e*x)**2/2 - 9*a*b**2*f**2*g*n**2*x**2*log(d + e*x)/2 +
 9*a*b**2*f**2*g*n**2*x**2/4 + 9*a*b**2*f**2*g*n*x**2*log(c)*log(d + e*x) -
 9*a*b**2*f**2*g*n*x**2*log(c)/2 + 9*a*b**2*f**2*g*x**2*log(c)**2/2 + 3*a*b
**2*f*g**2*n**2*x**3*log(d + e*x)**2 - 2*a*b**2*f*g**2*n**2*x**3*log(d + e*
x) + 2*a*b**2*f*g**2*n**2*x**3/3 + 6*a*b**2*f*g**2*n*x**3*log(c)*log(d + e*
x) - 2*a*b**2*f*g**2*n*x**3*log(c) + 3*a*b**2*f*g**2*x**3*log(c)**2 + 3*a*b
**2*g**3*n**2*x**4*log(d + e*x)**2/4 - 3*a*b**2*g**3*n**2*x**4*log(d + e*x)
/8 + 3*a*b**2*g**3*n**2*x**4/32 + 3*a*b**2*g**3*n*x**4*log(c)*log(d + e*x)/
2 - 3*a*b**2*g**3*n*x**4*log(c)/8 + 3*a*b**2*g**3*x**4*log(c)**2/4 - b**3*d
**4*g**3*n**3*log(d + e*x)**3/(4*e**4) + 25*b**3*d**4*g**3*n**3*log(d + e*x
)**2/(16*e**4) - 415*b**3*d**4*g**3*n**3*log(d + e*x)/(96*e**4) - 3*b**3*d*
*4*g**3*n**2*log(c)*log(d + e*x)**2/(4*e**4) + 25*b**3*d**4*g**3*n**2*log(c
)*log(d + e*x)/(8*e**4) - 3*b**3*d**4*g**3*n*log(c)**2*log(d + e*x)/(4*e**4
) + b**3*d**3*f*g**2*n**3*log(d + e*x)**3/e**3 - 11*b**3*d**3*f*g**2*n**3*l
og(d + e*x)**2/(2*e**3) + 85*b**3*d**3*f*g**2*n**3*log(d + e*x)/(6*e**3) +
3*b**3*d**3*f*g**2*n**2*log(c)*log(d + e*x)**2/e**3 - 11*b**3*d**3*f*g**2*n
**2*log(c)*log(d + e*x)/e**3 + 3*b**3*d**3*f*g**2*n*log(c)**2*log(d + e*x)/
e**3 + 3*b**3*d**3*g**3*n**3*x*log(d + e*x)**2/(4*e**3) - 25*b**3*d**3*g**3
*n**3*x*log(d + e*x)/(8*e**3) + 415*b**3*d**3*g**3*n**3*x/(96*e**3) + 3*b**
3*d**3*g**3*n**2*x*log(c)*log(d + e*x)/(2*e**3) - 25*b**3*d**3*g**3*n**2*x*
log(c)/(8*e**3) + 3*b**3*d**3*g**3*n*x*log(c)**2/(4*e**3) - 3*b**3*d**2*f**
2*g*n**3*log(d + e*x)**3/(2*e**2) + 27*b**3*d**2*f**2*g*n**3*log(d + e*x)**
2/(4*e**2) - 63*b**3*d**2*f**2*g*n**3*log(d + e*x)/(4*e**2) - 9*b**3*d**2*f
**2*g*n**2*log(c)*log(d + e*x)**2/(2*e**2) + 27*b**3*d**2*f**2*g*n**2*log(c
)*log(d + e*x)/(2*e**2) - 9*b**3*d**2*f**2*g*n*log(c)**2*log(d + e*x)/(2*e*
*2) - 3*b**3*d**2*f*g**2*n**3*x*log(d + e*x)**2/e**2 + 11*b**3*d**2*f*g**2*
n**3*x*log(d + e*x)/e**2 - 85*b**3*d**2*f*g**2*n**3*x/(6*e**2) - 6*b**3*d**
2*f*g**2*n**2*x*log(c)*log(d + e*x)/e**2 + 11*b**3*d**2*f*g**2*n**2*x*log(c
)/e**2 - 3*b**3*d**2*f*g**2*n*x*log(c)**2/e**2 - 3*b**3*d**2*g**3*n**3*x**2
*log(d + e*x)**2/(8*e**2) + 13*b**3*d**2*g**3*n**3*x**2*log(d + e*x)/(16*e*
*2) - 115*b**3*d**2*g**3*n**3*x**2/(192*e**2) - 3*b**3*d**2*g**3*n**2*x**2*
log(c)*log(d + e*x)/(4*e**2) + 13*b**3*d**2*g**3*n**2*x**2*log(c)/(16*e**2)
 - 3*b**3*d**2*g**3*n*x**2*log(c)**2/(8*e**2) + b**3*d*f**3*n**3*log(d + e*
x)**3/e - 3*b**3*d*f**3*n**3*log(d + e*x)**2/e + 6*b**3*d*f**3*n**3*log(d +
 e*x)/e + 3*b**3*d*f**3*n**2*log(c)*log(d + e*x)**2/e - 6*b**3*d*f**3*n**2*
log(c)*log(d + e*x)/e + 3*b**3*d*f**3*n*log(c)**2*log(d + e*x)/e + 9*b**3*d
*f**2*g*n**3*x*log(d + e*x)**2/(2*e) - 27*b**3*d*f**2*g*n**3*x*log(d + e*x)
/(2*e) + 63*b**3*d*f**2*g*n**3*x/(4*e) + 9*b**3*d*f**2*g*n**2*x*log(c)*log(
d + e*x)/e - 27*b**3*d*f**2*g*n**2*x*log(c)/(2*e) + 9*b**3*d*f**2*g*n*x*log
(c)**2/(2*e) + 3*b**3*d*f*g**2*n**3*x**2*log(d + e*x)**2/(2*e) - 5*b**3*d*f
*g**2*n**3*x**2*log(d + e*x)/(2*e) + 19*b**3*d*f*g**2*n**3*x**2/(12*e) + 3*
b**3*d*f*g**2*n**2*x**2*log(c)*log(d + e*x)/e - 5*b**3*d*f*g**2*n**2*x**2*l
og(c)/(2*e) + 3*b**3*d*f*g**2*n*x**2*log(c)**2/(2*e) + b**3*d*g**3*n**3*x**
3*log(d + e*x)**2/(4*e) - 7*b**3*d*g**3*n**3*x**3*log(d + e*x)/(24*e) + 37*
b**3*d*g**3*n**3*x**3/(288*e) + b**3*d*g**3*n**2*x**3*log(c)*log(d + e*x)/(
2*e) - 7*b**3*d*g**3*n**2*x**3*log(c)/(24*e) + b**3*d*g**3*n*x**3*log(c)**2
/(4*e) + b**3*f**3*n**3*x*log(d + e*x)**3 - 3*b**3*f**3*n**3*x*log(d + e*x)
```

```
**2 + 6*b**3*f**3*n**3*x*log(d + e*x) - 6*b**3*f**3*n**3*x + 3*b**3*f**3*n*
*2*x*log(c)*log(d + e*x)**2 - 6*b**3*f**3*n**2*x*log(c)*log(d + e*x) + 6*b*
*3*f**3*n**2*x*log(c) + 3*b**3*f**3*n*x*log(c)**2*log(d + e*x) - 3*b**3*f**
3*n*x*log(c)**2 + b**3*f**3*x*log(c)**3 + 3*b**3*f**2*g*n**3*x**2*log(d + e
*x)**3/2 - 9*b**3*f**2*g*n**3*x**2*log(d + e*x)**2/4 + 9*b**3*f**2*g*n**3*x
**2*log(d + e*x)/4 - 9*b**3*f**2*g*n**3*x**2/8 + 9*b**3*f**2*g*n**2*x**2*lo
g(c)*log(d + e*x)**2/2 - 9*b**3*f**2*g*n**2*x**2*log(c)*log(d + e*x)/2 + 9*
b**3*f**2*g*n**2*x**2*log(c)/4 + 9*b**3*f**2*g*n*x**2*log(c)**2*log(d + e*x
)/2 - 9*b**3*f**2*g*n*x**2*log(c)**2/4 + 3*b**3*f**2*g*x**2*log(c)**3/2 + b
**3*f*g**2*n**3*x**3*log(d + e*x)**3 - b**3*f*g**2*n**3*x**3*log(d + e*x)**
2 + 2*b**3*f*g**2*n**3*x**3*log(d + e*x)/3 - 2*b**3*f*g**2*n**3*x**3/9 + 3*
b**3*f*g**2*n**2*x**3*log(c)*log(d + e*x)**2 - 2*b**3*f*g**2*n**2*x**3*log(
c)*log(d + e*x) + 2*b**3*f*g**2*n**2*x**3*log(c)/3 + 3*b**3*f*g**2*n*x**3*l
og(c)**2*log(d + e*x) - b**3*f*g**2*n*x**3*log(c)**2 + b**3*f*g**2*x**3*log
(c)**3 + b**3*g**3*n**3*x**4*log(d + e*x)**3/4 - 3*b**3*g**3*n**3*x**4*log(
d + e*x)**2/16 + 3*b**3*g**3*n**3*x**4*log(d + e*x)/32 - 3*b**3*g**3*n**3*x
**4/128 + 3*b**3*g**3*n**2*x**4*log(c)*log(d + e*x)**2/4 - 3*b**3*g**3*n**2
*x**4*log(c)*log(d + e*x)/8 + 3*b**3*g**3*n**2*x**4*log(c)/32 + 3*b**3*g**3
*n*x**4*log(c)**2*log(d + e*x)/4 - 3*b**3*g**3*n*x**4*log(c)**2/16 + b**3*g
**3*x**4*log(c)**3/4, Ne(e, 0)), ((a + b*log(c*d**n))**3*(f**3*x + 3*f**2*g
*x**2/2 + f*g**2*x**3 + g**3*x**4/4), True))
```

Giac [B] time = 1.51654, size = 7131, normalized size = 11.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(x*e + d)^4*b^3*g^3*n^3*e^(-4)*log(x*e + d)^3 - (x*e + d)^3*b^3*d*g^3*n
^3*e^(-4)*log(x*e + d)^3 + 3/2*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e +
 d)^3 - (x*e + d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d)^3 - 3/16*(x*e + d)^4*
b^3*g^3*n^3*e^(-4)*log(x*e + d)^2 + (x*e + d)^3*b^3*d*g^3*n^3*e^(-4)*log(x*
e + d)^2 - 9/4*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e + d)^2 + 3*(x*e +
 d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d)^2 + (x*e + d)^3*b^3*f*g^2*n^3*e^(-3
)*log(x*e + d)^3 - 3*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3)*log(x*e + d)^3 + 3*
(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d)^3 + 3/4*(x*e + d)^4*b^3*g^3
*n^2*e^(-4)*log(x*e + d)^2*log(c) - 3*(x*e + d)^3*b^3*d*g^3*n^2*e^(-4)*log(
x*e + d)^2*log(c) + 9/2*(x*e + d)^2*b^3*d^2*g^3*n^2*e^(-4)*log(x*e + d)^2*l
og(c) - 3*(x*e + d)*b^3*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2*log(c) + 3/32*(x*
e + d)^4*b^3*g^3*n^3*e^(-4)*log(x*e + d) - 2/3*(x*e + d)^3*b^3*d*g^3*n^3*e^
(-4)*log(x*e + d) + 9/4*(x*e + d)^2*b^3*d^2*g^3*n^3*e^(-4)*log(x*e + d) - 6
*(x*e + d)*b^3*d^3*g^3*n^3*e^(-4)*log(x*e + d) - (x*e + d)^3*b^3*f*g^2*n^3*
e^(-3)*log(x*e + d)^2 + 9/2*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3)*log(x*e + d)
^2 - 9*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d)^2 + 3/4*(x*e + d)^4*
a*b^2*g^3*n^2*e^(-4)*log(x*e + d)^2 - 3*(x*e + d)^3*a*b^2*d*g^3*n^2*e^(-4)*
log(x*e + d)^2 + 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4)*log(x*e + d)^2 -
3*(x*e + d)*a*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^3*f
^2*g*n^3*e^(-2)*log(x*e + d)^3 - 3*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2)*log(x*e
 + d)^3 - 3/8*(x*e + d)^4*b^3*g^3*n^2*e^(-4)*log(x*e + d)*log(c) + 2*(x*e +
 d)^3*b^3*d*g^3*n^2*e^(-4)*log(x*e + d)*log(c) - 9/2*(x*e + d)^2*b^3*d^2*g^
3*n^2*e^(-4)*log(x*e + d)*log(c) + 6*(x*e + d)*b^3*d^3*g^3*n^2*e^(-4)*log(x
*e + d)*log(c) + 3*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) -
 9*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 9*(x*e + d)*b
^3*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 3/4*(x*e + d)^4*b^3*g^3*n*e
^(-4)*log(x*e + d)*log(c)^2 - 3*(x*e + d)^3*b^3*d*g^3*n*e^(-4)*log(x*e + d)
```

```
*log(c)^2 + 9/2*(x*e + d)^2*b^3*d^2*g^3*n*e^(-4)*log(x*e + d)*log(c)^2 - 3*
(x*e + d)*b^3*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c)^2 - 3/128*(x*e + d)^4*b^
3*g^3*n^3*e^(-4) + 2/9*(x*e + d)^3*b^3*d*g^3*n^3*e^(-4) - 9/8*(x*e + d)^2*b
^3*d^2*g^3*n^3*e^(-4) + 6*(x*e + d)*b^3*d^3*g^3*n^3*e^(-4) + 2/3*(x*e + d)^
3*b^3*f*g^2*n^3*e^(-3)*log(x*e + d) - 9/2*(x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3
)*log(x*e + d) + 18*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3)*log(x*e + d) - 3/8*(
x*e + d)^4*a*b^2*g^3*n^2*e^(-4)*log(x*e + d) + 2*(x*e + d)^3*a*b^2*d*g^3*n^
2*e^(-4)*log(x*e + d) - 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4)*log(x*e +
d) + 6*(x*e + d)*a*b^2*d^3*g^3*n^2*e^(-4)*log(x*e + d) - 9/4*(x*e + d)^2*b^
3*f^2*g*n^3*e^(-2)*log(x*e + d)^2 + 9*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2)*log(
x*e + d)^2 + 3*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(-3)*log(x*e + d)^2 - 9*(x*e +
 d)^2*a*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d)^2 + 9*(x*e + d)*a*b^2*d^2*f*g^2
*n^2*e^(-3)*log(x*e + d)^2 + (x*e + d)*b^3*f^3*n^3*e^(-1)*log(x*e + d)^3 +
3/32*(x*e + d)^4*b^3*g^3*n^2*e^(-4)*log(c) - 2/3*(x*e + d)^3*b^3*d*g^3*n^2*
e^(-4)*log(c) + 9/4*(x*e + d)^2*b^3*d^2*g^3*n^2*e^(-4)*log(c) - 6*(x*e + d)
*b^3*d^3*g^3*n^2*e^(-4)*log(c) - 2*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3)*log(x*e
 + d)*log(c) + 9*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(x*e + d)*log(c) - 1
8*(x*e + d)*b^3*d^2*f*g^2*n^2*e^(-3)*log(x*e + d)*log(c) + 3/2*(x*e + d)^4*
a*b^2*g^3*n*e^(-4)*log(x*e + d)*log(c) - 6*(x*e + d)^3*a*b^2*d*g^3*n*e^(-4)
*log(x*e + d)*log(c) + 9*(x*e + d)^2*a*b^2*d^2*g^3*n*e^(-4)*log(x*e + d)*lo
g(c) - 6*(x*e + d)*a*b^2*d^3*g^3*n*e^(-4)*log(x*e + d)*log(c) + 9/2*(x*e +
d)^2*b^3*f^2*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 9*(x*e + d)*b^3*d*f^2*g*n
^2*e^(-2)*log(x*e + d)^2*log(c) - 3/16*(x*e + d)^4*b^3*g^3*n*e^(-4)*log(c)^
2 + (x*e + d)^3*b^3*d*g^3*n*e^(-4)*log(c)^2 - 9/4*(x*e + d)^2*b^3*d^2*g^3*n
*e^(-4)*log(c)^2 + 3*(x*e + d)*b^3*d^3*g^3*n*e^(-4)*log(c)^2 + 3*(x*e + d)^
3*b^3*f*g^2*n*e^(-3)*log(x*e + d)*log(c)^2 - 9*(x*e + d)^2*b^3*d*f*g^2*n*e^
(-3)*log(x*e + d)*log(c)^2 + 9*(x*e + d)*b^3*d^2*f*g^2*n*e^(-3)*log(x*e + d
)*log(c)^2 + 1/4*(x*e + d)^4*b^3*g^3*e^(-4)*log(c)^3 - (x*e + d)^3*b^3*d*g^
3*e^(-4)*log(c)^3 + 3/2*(x*e + d)^2*b^3*d^2*g^3*e^(-4)*log(c)^3 - (x*e + d)
*b^3*d^3*g^3*e^(-4)*log(c)^3 - 2/9*(x*e + d)^3*b^3*f*g^2*n^3*e^(-3) + 9/4*(
x*e + d)^2*b^3*d*f*g^2*n^3*e^(-3) - 18*(x*e + d)*b^3*d^2*f*g^2*n^3*e^(-3) +
 3/32*(x*e + d)^4*a*b^2*g^3*n^2*e^(-4) - 2/3*(x*e + d)^3*a*b^2*d*g^3*n^2*e^
(-4) + 9/4*(x*e + d)^2*a*b^2*d^2*g^3*n^2*e^(-4) - 6*(x*e + d)*a*b^2*d^3*g^3
*n^2*e^(-4) + 9/4*(x*e + d)^2*b^3*f^2*g*n^3*e^(-2)*log(x*e + d) - 18*(x*e +
 d)*b^3*d*f^2*g*n^3*e^(-2)*log(x*e + d) - 2*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(
-3)*log(x*e + d) + 9*(x*e + d)^2*a*b^2*d*f*g^2*n^2*e^(-3)*log(x*e + d) - 18
*(x*e + d)*a*b^2*d^2*f*g^2*n^2*e^(-3)*log(x*e + d) + 3/4*(x*e + d)^4*a^2*b*
g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)^3*a^2*b*d*g^3*n*e^(-4)*log(x*e + d)
 + 9/2*(x*e + d)^2*a^2*b*d^2*g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)*a^2*b*
d^3*g^3*n*e^(-4)*log(x*e + d) - 3*(x*e + d)*b^3*f^3*n^3*e^(-1)*log(x*e + d)
^2 + 9/2*(x*e + d)^2*a*b^2*f^2*g*n^2*e^(-2)*log(x*e + d)^2 - 9*(x*e + d)*a*
b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d)^2 + 2/3*(x*e + d)^3*b^3*f*g^2*n^2*e^(-3
)*log(c) - 9/2*(x*e + d)^2*b^3*d*f*g^2*n^2*e^(-3)*log(c) + 18*(x*e + d)*b^3
*d^2*f*g^2*n^2*e^(-3)*log(c) - 3/8*(x*e + d)^4*a*b^2*g^3*n*e^(-4)*log(c) +
2*(x*e + d)^3*a*b^2*d*g^3*n*e^(-4)*log(c) - 9/2*(x*e + d)^2*a*b^2*d^2*g^3*n
*e^(-4)*log(c) + 6*(x*e + d)*a*b^2*d^3*g^3*n*e^(-4)*log(c) - 9/2*(x*e + d)^
2*b^3*f^2*g*n^2*e^(-2)*log(x*e + d)*log(c) + 18*(x*e + d)*b^3*d*f^2*g*n^2*e
^(-2)*log(x*e + d)*log(c) + 6*(x*e + d)^3*a*b^2*f*g^2*n*e^(-3)*log(x*e + d)
*log(c) - 18*(x*e + d)^2*a*b^2*d*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 18*(x
*e + d)*a*b^2*d^2*f*g^2*n*e^(-3)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f^3*
n^2*e^(-1)*log(x*e + d)^2*log(c) - (x*e + d)^3*b^3*f*g^2*n*e^(-3)*log(c)^2
+ 9/2*(x*e + d)^2*b^3*d*f*g^2*n*e^(-3)*log(c)^2 - 9*(x*e + d)*b^3*d^2*f*g^2
*n*e^(-3)*log(c)^2 + 3/4*(x*e + d)^4*a*b^2*g^3*e^(-4)*log(c)^2 - 3*(x*e + d
)^3*a*b^2*d*g^3*e^(-4)*log(c)^2 + 9/2*(x*e + d)^2*a*b^2*d^2*g^3*e^(-4)*log(
c)^2 - 3*(x*e + d)*a*b^2*d^3*g^3*e^(-4)*log(c)^2 + 9/2*(x*e + d)^2*b^3*f^2*
g*n*e^(-2)*log(x*e + d)*log(c)^2 - 9*(x*e + d)*b^3*d*f^2*g*n*e^(-2)*log(x*e
 + d)*log(c)^2 + (x*e + d)^3*b^3*f*g^2*e^(-3)*log(c)^3 - 3*(x*e + d)^2*b^3*
d*f*g^2*e^(-3)*log(c)^3 + 3*(x*e + d)*b^3*d^2*f*g^2*e^(-3)*log(c)^3 - 9/8*(
x*e + d)^2*b^3*f^2*g*n^3*e^(-2) + 18*(x*e + d)*b^3*d*f^2*g*n^3*e^(-2) + 2/3
```

```
*(x*e + d)^3*a*b^2*f*g^2*n^2*e^(-3) - 9/2*(x*e + d)^2*a*b^2*d*f*g^2*n^2*e^(
-3) + 18*(x*e + d)*a*b^2*d^2*f*g^2*n^2*e^(-3) - 3/16*(x*e + d)^4*a^2*b*g^3*
n*e^(-4) + (x*e + d)^3*a^2*b*d*g^3*n*e^(-4) - 9/4*(x*e + d)^2*a^2*b*d^2*g^3
*n*e^(-4) + 3*(x*e + d)*a^2*b*d^3*g^3*n*e^(-4) + 6*(x*e + d)*b^3*f^3*n^3*e^
(-1)*log(x*e + d) - 9/2*(x*e + d)^2*a*b^2*f^2*g*n^2*e^(-2)*log(x*e + d) + 1
8*(x*e + d)*a*b^2*d*f^2*g*n^2*e^(-2)*log(x*e + d) + 3*(x*e + d)^3*a^2*b*f*g
^2*n*e^(-3)*log(x*e + d) - 9*(x*e + d)^2*a^2*b*d*f*g^2*n*e^(-3)*log(x*e + d
) + 9*(x*e + d)*a^2*b*d^2*f*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a*b^2*f
^3*n^2*e^(-1)*log(x*e + d)^2 + 9/4*(x*e + d)^2*b^3*f^2*g*n^2*e^(-2)*log(c)
- 18*(x*e + d)*b^3*d*f^2*g*n^2*e^(-2)*log(c) - 2*(x*e + d)^3*a*b^2*f*g^2*n*
e^(-3)*log(c) + 9*(x*e + d)^2*a*b^2*d*f*g^2*n*e^(-3)*log(c) - 18*(x*e + d)*
a*b^2*d^2*f*g^2*n*e^(-3)*log(c) + 3/4*(x*e + d)^4*a^2*b*g^3*e^(-4)*log(c) -
 3*(x*e + d)^3*a^2*b*d*g^3*e^(-4)*log(c) + 9/2*(x*e + d)^2*a^2*b*d^2*g^3*e^
(-4)*log(c) - 3*(x*e + d)*a^2*b*d^3*g^3*e^(-4)*log(c) - 6*(x*e + d)*b^3*f^3
*n^2*e^(-1)*log(x*e + d)*log(c) + 9*(x*e + d)^2*a*b^2*f^2*g*n*e^(-2)*log(x*
e + d)*log(c) - 18*(x*e + d)*a*b^2*d*f^2*g*n*e^(-2)*log(x*e + d)*log(c) - 9
/4*(x*e + d)^2*b^3*f^2*g*n*e^(-2)*log(c)^2 + 9*(x*e + d)*b^3*d*f^2*g*n*e^(-
2)*log(c)^2 + 3*(x*e + d)^3*a*b^2*f*g^2*e^(-3)*log(c)^2 - 9*(x*e + d)^2*a*b
^2*d*f*g^2*e^(-3)*log(c)^2 + 9*(x*e + d)*a*b^2*d^2*f*g^2*e^(-3)*log(c)^2 +
3*(x*e + d)*b^3*f^3*n*e^(-1)*log(x*e + d)*log(c)^2 + 3/2*(x*e + d)^2*b^3*f^
2*g*e^(-2)*log(c)^3 - 3*(x*e + d)*b^3*d*f^2*g*e^(-2)*log(c)^3 - 6*(x*e + d)
*b^3*f^3*n^3*e^(-1) + 9/4*(x*e + d)^2*a*b^2*f^2*g*n^2*e^(-2) - 18*(x*e + d)
*a*b^2*d*f^2*g*n^2*e^(-2) - (x*e + d)^3*a^2*b*f*g^2*n*e^(-3) + 9/2*(x*e + d
)^2*a^2*b*d*f*g^2*n*e^(-3) - 9*(x*e + d)*a^2*b*d^2*f*g^2*n*e^(-3) + 1/4*(x*
e + d)^4*a^3*g^3*e^(-4) - (x*e + d)^3*a^3*d*g^3*e^(-4) + 3/2*(x*e + d)^2*a^
3*d^2*g^3*e^(-4) - (x*e + d)*a^3*d^3*g^3*e^(-4) - 6*(x*e + d)*a*b^2*f^3*n^2
*e^(-1)*log(x*e + d) + 9/2*(x*e + d)^2*a^2*b*f^2*g*n*e^(-2)*log(x*e + d) -
9*(x*e + d)*a^2*b*d*f^2*g*n*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^3*f^3*n^2*e
^(-1)*log(c) - 9/2*(x*e + d)^2*a*b^2*f^2*g*n*e^(-2)*log(c) + 18*(x*e + d)*a
*b^2*d*f^2*g*n*e^(-2)*log(c) + 3*(x*e + d)^3*a^2*b*f*g^2*e^(-3)*log(c) - 9*
(x*e + d)^2*a^2*b*d*f*g^2*e^(-3)*log(c) + 9*(x*e + d)*a^2*b*d^2*f*g^2*e^(-3
)*log(c) + 6*(x*e + d)*a*b^2*f^3*n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)
*b^3*f^3*n*e^(-1)*log(c)^2 + 9/2*(x*e + d)^2*a*b^2*f^2*g*e^(-2)*log(c)^2 -
9*(x*e + d)*a*b^2*d*f^2*g*e^(-2)*log(c)^2 + (x*e + d)*b^3*f^3*e^(-1)*log(c)
^3 + 6*(x*e + d)*a*b^2*f^3*n^2*e^(-1) - 9/4*(x*e + d)^2*a^2*b*f^2*g*n*e^(-2
) + 9*(x*e + d)*a^2*b*d*f^2*g*n*e^(-2) + (x*e + d)^3*a^3*f*g^2*e^(-3) - 3*(
x*e + d)^2*a^3*d*f*g^2*e^(-3) + 3*(x*e + d)*a^3*d^2*f*g^2*e^(-3) + 3*(x*e +
 d)*a^2*b*f^3*n*e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*f^3*n*e^(-1)*log(c)
 + 9/2*(x*e + d)^2*a^2*b*f^2*g*e^(-2)*log(c) - 9*(x*e + d)*a^2*b*d*f^2*g*e^
(-2)*log(c) + 3*(x*e + d)*a*b^2*f^3*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f^3
*n*e^(-1) + 3/2*(x*e + d)^2*a^3*f^2*g*e^(-2) - 3*(x*e + d)*a^3*d*f^2*g*e^(-
2) + 3*(x*e + d)*a^2*b*f^3*e^(-1)*log(c) + (x*e + d)*a^3*f^3*e^(-1)
```

3.53 $\int (f+gx)^2 (a+b\log(c(d+ex)^n))^3\,dx$

Optimal. Leaf size=432

$$\frac{3b^2gn^2(d+ex)^2(ef-dg)\,(a+b\log(c(d+ex)^n))}{2e^3}+\frac{2b^2g^2n^2(d+ex)^3\,(a+b\log(c(d+ex)^n))}{9e^3}+\frac{6ab^2n^2x(ef-dg)^2}{e^2}-\frac{3bg}{}$$

```
[Out] (6*a*b^2*(e*f - d*g)^2*n^2*x)/e^2 - (6*b^3*(e*f - d*g)^2*n^3*x)/e^2 - (3*b^
3*g*(e*f - d*g)*n^3*(d + e*x)^2)/(4*e^3) - (2*b^3*g^2*n^3*(d + e*x)^3)/(27*
e^3) + (6*b^3*(e*f - d*g)^2*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^3 + (3*b^2*
g*(e*f - d*g)*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^3) + (2*b^2*
g^2*n^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (3*b*(e*f - d*g)^
2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e^3 - (3*b*g*(e*f - d*g)*n*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^3) - (b*g^2*n*(d + e*x)^3*(a + b
*Log[c*(d + e*x)^n])^2)/(3*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d
+ e*x)^n])^3)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3
)/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/(3*e^3)
```

Rubi [A] time = 0.384478, antiderivative size = 432, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{3b^2gn^2(d+ex)^2(ef-dg)\,(a+b\log(c(d+ex)^n))}{2e^3}+\frac{2b^2g^2n^2(d+ex)^3\,(a+b\log(c(d+ex)^n))}{9e^3}+\frac{6ab^2n^2x(ef-dg)^2}{e^2}-\frac{3bg}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (6*a*b^2*(e*f - d*g)^2*n^2*x)/e^2 - (6*b^3*(e*f - d*g)^2*n^3*x)/e^2 - (3*b^
3*g*(e*f - d*g)*n^3*(d + e*x)^2)/(4*e^3) - (2*b^3*g^2*n^3*(d + e*x)^3)/(27*
e^3) + (6*b^3*(e*f - d*g)^2*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^3 + (3*b^2*
g*(e*f - d*g)*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^3) + (2*b^2*
g^2*n^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(9*e^3) - (3*b*(e*f - d*g)^
2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e^3 - (3*b*g*(e*f - d*g)*n*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^3) - (b*g^2*n*(d + e*x)^3*(a + b
*Log[c*(d + e*x)^n])^2)/(3*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d
+ e*x)^n])^3)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3
)/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^3)/(3*e^3)
```

Rule 2401

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

Rule 2389

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

Rule 2296

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

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

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

Rule 2390

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

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int (f+gx)^2 (a+b\log(c(d+ex)^n))^3\, dx = \int \left(\frac{(ef-dg)^2 (a+b\log(c(d+ex)^n))^3}{e^2} + \frac{2g(ef-dg)(d+ex)(a+b\log(c(d\right.$$

$$= \frac{g^2 \int (d+ex)^2 (a+b\log(c(d+ex)^n))^3\, dx}{e^2} + \frac{(2g(ef-dg))\int (d+ex)(a+b\log}{e^2}$$

$$= \frac{g^2\, \text{Subst}\left(\int x^2 (a+b\log(cx^n))^3\, dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\,\text{Subst}\left(\int x\right.}{}$$

$$= \frac{(ef-dg)^2(d+ex)(a+b\log(c(d+ex)^n))^3}{e^3} + \frac{g(ef-dg)(d+ex)^2(a+b\log}{e^3}$$

$$= -\frac{3b(ef-dg)^2 n(d+ex)(a+b\log(c(d+ex)^n))^2}{e^3} - \frac{3bg(ef-dg)n(d+ex)^2(}{2e}$$

$$= \frac{6ab^2(ef-dg)^2n^2x}{e^2} - \frac{3b^3g(ef-dg)n^3(d+ex)^2}{4e^3} - \frac{2b^3g^2n^3(d+ex)^3}{27e^3} + \frac{3b^2g}{}$$

$$= \frac{6ab^2(ef-dg)^2n^2x}{e^2} - \frac{6b^3(ef-dg)^2n^3x}{e^2} - \frac{3b^3g(ef-dg)n^3(d+ex)^2}{4e^3} - \frac{2b^3g}{}$$

Mathematica [A] time = 0.213052, size = 333, normalized size = 0.77

$$\frac{-4bg^2n\left(2bn\left(benx\left(3d^2+3dex+e^2x^2\right)-3(d+ex)^3(a+b\log(c(d+ex)^n))\right)+9(d+ex)^3(a+b\log(c(d+ex)^n))^2\right)+1}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] (108*(e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3 + 108*g*(e*f - d*
g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^3 + 36*g^2*(d + e*x)^3*(a + b*Log
```

```
[c*(d + e*x)^n])^3 - 324*b*(e*f - d*g)^2*n*((d + e*x)*(a + b*Log[c*(d + e*x
)^n])^2 - 2*b*n*(e*(a - b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n])) - 81*b*g*
(e*f - d*g)*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 + b*n*(b*e*n*x*(2
*d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))) - 4*b*g^2*n*(9*(d +
e*x)^3*(a + b*Log[c*(d + e*x)^n])^2 + 2*b*n*(b*e*n*x*(3*d^2 + 3*d*e*x + e^2
*x^2) - 3*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n]))))/(108*e^3)
```

Maple [C] time = 1.743, size = 20417, normalized size = 47.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [B] time = 1.8809, size = 1539, normalized size = 3.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*g^2*x^3*log((e*x + d)^n*c)^3 + a*b^2*g^2*x^3*log((e*x + d)^n*c)^2 +
 b^3*f*g*x^2*log((e*x + d)^n*c)^3 + a^2*b*g^2*x^3*log((e*x + d)^n*c) + 3*a*
b^2*f*g*x^2*log((e*x + d)^n*c)^2 + b^3*f^2*x*log((e*x + d)^n*c)^3 + 1/3*a^3
*g^2*x^3 - 3*a^2*b*e*f^2*n*(x/e - d*log(e*x + d)/e^2) + 1/6*a^2*b*e*g^2*n*(
6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) - 3/2*a^2*b
*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 3*a^2*b*f*g*x^2*l
og((e*x + d)^n*c) + 3*a*b^2*f^2*x*log((e*x + d)^n*c)^2 + a^3*f*g*x^2 + 3*a^
2*b*f^2*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x
 + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a*b^2*f^2
 - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x
 + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log
(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*b^3*f^2
- 3/2*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n
*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e
^2)*a*b^2*f*g - 1/4*(6*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*l
og((e*x + d)^n*c)^2 + e*n*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e
*x + d)^2 - 42*d*e*x + 42*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*lo
g(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3
*f*g + 1/18*(6*e*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2
*x)/e^3)*log((e*x + d)^n*c) + (4*e^3*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x +
d)^2 + 66*d^2*e*x - 66*d^3*log(e*x + d))*n^2/e^3)*a*b^2*g^2 + 1/108*(18*e*n
*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x
+ d)^n*c)^2 - e*n*((8*e^3*x^3 - 36*d^3*log(e*x + d)^3 - 57*d*e^2*x^2 - 198*
d^3*log(e*x + d)^2 + 510*d^2*e*x - 510*d^3*log(e*x + d))*n^2/e^4 - 6*(4*e^3
*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e*x +
 d))*n*log((e*x + d)^n*c)/e^4))*b^3*g^2 + a^3*f^2*x
```

Fricas [B] time = 2.56195, size = 3644, normalized size = 8.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/108*(4*(2*b^3*e^3*g^2*n^3 - 6*a*b^2*e^3*g^2*n^2 + 9*a^2*b*e^3*g^2*n - 9*
a^3*e^3*g^2)*x^3 - 36*(b^3*e^3*g^2*n^3*x^3 + 3*b^3*e^3*f*g*n^3*x^2 + 3*b^3*
e^3*f^2*n^3*x + (3*b^3*d*e^2*f^2 - 3*b^3*d^2*e*f*g + b^3*d^3*g^2)*n^3)*log(
e*x + d)^3 - 36*(b^3*e^3*g^2*x^3 + 3*b^3*e^3*f*g*x^2 + 3*b^3*e^3*f^2*x)*log
(c)^3 - 3*(36*a^3*e^3*f*g - (27*b^3*e^3*f*g - 19*b^3*d*e^2*g^2)*n^3 + 6*(9*
a*b^2*e^3*f*g - 5*a*b^2*d*e^2*g^2)*n^2 - 18*(3*a^2*b*e^3*f*g - a^2*b*d*e^2*
g^2)*n)*x^2 + 18*((18*b^3*d*e^2*f^2 - 27*b^3*d^2*e*f*g + 11*b^3*d^3*g^2)*n^
3 + 2*(b^3*e^3*g^2*n^3 - 3*a*b^2*e^3*g^2*n^2)*x^3 - 6*(3*a*b^2*d*e^2*f^2 -
3*a*b^2*d^2*e*f*g + a*b^2*d^3*g^2)*n^2 - 3*(6*a*b^2*e^3*f*g*n^2 - (3*b^3*e^
3*f*g - b^3*d*e^2*g^2)*n^3)*x^2 - 6*(3*a*b^2*e^3*f^2*n^2 - (3*b^3*e^3*f^2 -
 3*b^3*d*e^2*f*g + b^3*d^2*e*g^2)*n^3)*x - 6*(b^3*e^3*g^2*n^2*x^3 + 3*b^3*e
^3*f*g*n^2*x^2 + 3*b^3*e^3*f^2*n^2*x + (3*b^3*d*e^2*f^2 - 3*b^3*d^2*e*f*g +
 b^3*d^3*g^2)*n^2)*log(c))*log(e*x + d)^2 + 18*(2*(b^3*e^3*g^2*n - 3*a*b^2*
e^3*g^2)*x^3 - 3*(6*a*b^2*e^3*f*g - (3*b^3*e^3*f*g - b^3*d*e^2*g^2)*n)*x^2
- 6*(3*a*b^2*e^3*f^2 - (3*b^3*e^3*f^2 - 3*b^3*d*e^2*f*g + b^3*d^2*e*g^2)*n)
*x)*log(c)^2 - 6*(18*a^3*e^3*f^2 - (108*b^3*e^3*f^2 - 189*b^3*d*e^2*f*g + 8
5*b^3*d^2*e*g^2)*n^3 + 6*(18*a*b^2*e^3*f^2 - 27*a*b^2*d*e^2*f*g + 11*a*b^2*
d^2*e*g^2)*n^2 - 18*(3*a^2*b*e^3*f^2 - 3*a^2*b*d*e^2*f*g + a^2*b*d^2*e*g^2)
*n)*x - 6*((108*b^3*d*e^2*f^2 - 189*b^3*d^2*e*f*g + 85*b^3*d^3*g^2)*n^3 + 2
*(2*b^3*e^3*g^2*n^3 - 6*a*b^2*e^3*g^2*n^2 + 9*a^2*b*e^3*g^2*n)*x^3 - 6*(18*
a*b^2*d*e^2*f^2 - 27*a*b^2*d^2*e*f*g + 11*a*b^2*d^3*g^2)*n^2 + 3*(18*a^2*b*
e^3*f*g*n + (9*b^3*e^3*f*g - 5*b^3*d*e^2*g^2)*n^3 - 6*(3*a*b^2*e^3*f*g - a*
b^2*d*e^2*g^2)*n^2)*x^2 + 18*(b^3*e^3*g^2*n*x^3 + 3*b^3*e^3*f*g*n*x^2 + 3*b
^3*e^3*f^2*n*x + (3*b^3*d*e^2*f^2 - 3*b^3*d^2*e*f*g + b^3*d^3*g^2)*n)*log(c
)^2 + 18*(3*a^2*b*d*e^2*f^2 - 3*a^2*b*d^2*e*f*g + a^2*b*d^3*g^2)*n + 6*(9*a
^2*b*e^3*f^2*n + (18*b^3*e^3*f^2 - 27*b^3*d*e^2*f*g + 11*b^3*d^2*e*g^2)*n^3
 - 6*(3*a*b^2*e^3*f^2 - 3*a*b^2*d*e^2*f*g + a*b^2*d^2*e*g^2)*n^2)*x - 6*(2*
(b^3*e^3*g^2*n^2 - 3*a*b^2*e^3*g^2*n)*x^3 + (18*b^3*d*e^2*f^2 - 27*b^3*d^2*
e*f*g + 11*b^3*d^3*g^2)*n^2 - 3*(6*a*b^2*e^3*f*g*n - (3*b^3*e^3*f*g - b^3*d
*e^2*g^2)*n^2)*x^2 - 6*(3*a*b^2*d*e^2*f^2 - 3*a*b^2*d^2*e*f*g + a*b^2*d^3*g
^2)*n - 6*(3*a*b^2*e^3*f^2*n - (3*b^3*e^3*f^2 - 3*b^3*d*e^2*f*g + b^3*d^2*e
*g^2)*n^2)*x)*log(c))*log(e*x + d) - 6*(2*(2*b^3*e^3*g^2*n^2 - 6*a*b^2*e^3*
g^2*n + 9*a^2*b*e^3*g^2)*x^3 + 3*(18*a^2*b*e^3*f*g + (9*b^3*e^3*f*g - 5*b^3
*d*e^2*g^2)*n^2 - 6*(3*a*b^2*e^3*f*g - a*b^2*d*e^2*g^2)*n)*x^2 + 6*(9*a^2*b
*e^3*f^2 + (18*b^3*e^3*f^2 - 27*b^3*d*e^2*f*g + 11*b^3*d^2*e*g^2)*n^2 - 6*(
3*a*b^2*e^3*f^2 - 3*a*b^2*d*e^2*f*g + a*b^2*d^2*e*g^2)*n)*x)*log(c))/e^3
```

Sympy [A] time = 23.6911, size = 2746, normalized size = 6.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**3,x)
```

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

```
a**2*b*d*g**2*n*x**2/(2*e) + 3*a**2*b*f**2*n*x*log(d + e*x) - 3*a**2*b*f**2
*n*x + 3*a**2*b*f**2*x*log(c) + 3*a**2*b*f*g*n*x**2*log(d + e*x) - 3*a**2*b
*f*g*n*x**2/2 + 3*a**2*b*f*g*x**2*log(c) + a**2*b*g**2*n*x**3*log(d + e*x)
- a**2*b*g**2*n*x**3/3 + a**2*b*g**2*x**3*log(c) + a*b**2*d**3*g**2*n**2*lo
g(d + e*x)**2/e**3 - 11*a*b**2*d**3*g**2*n**2*log(d + e*x)/(3*e**3) + 2*a*b
**2*d**3*g**2*n*log(c)*log(d + e*x)/e**3 - 3*a*b**2*d**2*f*g*n**2*log(d + e
*x)**2/e**2 + 9*a*b**2*d**2*f*g*n**2*log(d + e*x)/e**2 - 6*a*b**2*d**2*f*g*
n*log(c)*log(d + e*x)/e**2 - 2*a*b**2*d**2*g**2*n**2*x*log(d + e*x)/e**2 +
11*a*b**2*d**2*g**2*n**2*x/(3*e**2) - 2*a*b**2*d**2*g**2*n*x*log(c)/e**2 +
3*a*b**2*d*f**2*n**2*log(d + e*x)**2/e - 6*a*b**2*d*f**2*n**2*log(d + e*x)/
e + 6*a*b**2*d*f**2*n*log(c)*log(d + e*x)/e + 6*a*b**2*d*f*g*n**2*x*log(d +
 e*x)/e - 9*a*b**2*d*f*g*n**2*x/e + 6*a*b**2*d*f*g*n*x*log(c)/e + a*b**2*d*
g**2*n**2*x**2*log(d + e*x)/e - 5*a*b**2*d*g**2*n**2*x**2/(6*e) + a*b**2*d*
g**2*n*x**2*log(c)/e + 3*a*b**2*f**2*n**2*x*log(d + e*x)**2 - 6*a*b**2*f**2
*n**2*x*log(d + e*x) + 6*a*b**2*f**2*n**2*x + 6*a*b**2*f**2*n*x*log(c)*log(
d + e*x) - 6*a*b**2*f**2*n*x*log(c) + 3*a*b**2*f**2*x*log(c)**2 + 3*a*b**2*
f*g*n**2*x**2*log(d + e*x)**2 - 3*a*b**2*f*g*n**2*x**2*log(d + e*x) + 3*a*b
**2*f*g*n**2*x**2/2 + 6*a*b**2*f*g*n*x**2*log(c)*log(d + e*x) - 3*a*b**2*f*
g*n*x**2*log(c) + 3*a*b**2*f*g*x**2*log(c)**2 + a*b**2*g**2*n**2*x**3*log(d
 + e*x)**2 - 2*a*b**2*g**2*n**2*x**3*log(d + e*x)/3 + 2*a*b**2*g**2*n**2*x*
*3/9 + 2*a*b**2*g**2*n*x**3*log(c)*log(d + e*x) - 2*a*b**2*g**2*n*x**3*log(
c)/3 + a*b**2*g**2*x**3*log(c)**2 + b**3*d**3*g**2*n**3*log(d + e*x)**3/(3*
e**3) - 11*b**3*d**3*g**2*n**3*log(d + e*x)**2/(6*e**3) + 85*b**3*d**3*g**2
*n**3*log(d + e*x)/(18*e**3) + b**3*d**3*g**2*n**2*log(c)*log(d + e*x)**2/e
**3 - 11*b**3*d**3*g**2*n**2*log(c)*log(d + e*x)/(3*e**3) + b**3*d**3*g**2*
n*log(c)**2*log(d + e*x)/e**3 - b**3*d**2*f*g*n**3*log(d + e*x)**3/e**2 + 9
*b**3*d**2*f*g*n**3*log(d + e*x)**2/(2*e**2) - 21*b**3*d**2*f*g*n**3*log(d
+ e*x)/(2*e**2) - 3*b**3*d**2*f*g*n**2*log(c)*log(d + e*x)**2/e**2 + 9*b**3
*d**2*f*g*n**2*log(c)*log(d + e*x)/e**2 - 3*b**3*d**2*f*g*n*log(c)**2*log(d
 + e*x)/e**2 - b**3*d**2*g**2*n**3*x*log(d + e*x)**2/e**2 + 11*b**3*d**2*g*
*2*n**3*x*log(d + e*x)/(3*e**2) - 85*b**3*d**2*g**2*n**3*x/(18*e**2) - 2*b*
*3*d**2*g**2*n**2*x*log(c)*log(d + e*x)/e**2 + 11*b**3*d**2*g**2*n**2*x*log
(c)/(3*e**2) - b**3*d**2*g**2*n*x*log(c)**2/e**2 + b**3*d*f**2*n**3*log(d +
 e*x)**3/e - 3*b**3*d*f**2*n**3*log(d + e*x)**2/e + 6*b**3*d*f**2*n**3*log(
d + e*x)/e + 3*b**3*d*f**2*n**2*log(c)*log(d + e*x)**2/e - 6*b**3*d*f**2*n*
*2*log(c)*log(d + e*x)/e + 3*b**3*d*f**2*n*log(c)**2*log(d + e*x)/e + 3*b**
3*d*f*g*n**3*x*log(d + e*x)**2/e - 9*b**3*d*f*g*n**3*x*log(d + e*x)/e + 21*
b**3*d*f*g*n**3*x/(2*e) + 6*b**3*d*f*g*n**2*x*log(c)*log(d + e*x)/e - 9*b**
3*d*f*g*n**2*x*log(c)/e + 3*b**3*d*f*g*n*x*log(c)**2/e + b**3*d*g**2*n**3*x
**2*log(d + e*x)**2/(2*e) - 5*b**3*d*g**2*n**3*x**2*log(d + e*x)/(6*e) + 19
*b**3*d*g**2*n**3*x**2/(36*e) + b**3*d*g**2*n**2*x**2*log(c)*log(d + e*x)/e
 - 5*b**3*d*g**2*n**2*x**2*log(c)/(6*e) + b**3*d*g**2*n*x**2*log(c)**2/(2*e
) + b**3*f**2*n**3*x*log(d + e*x)**3 - 3*b**3*f**2*n**3*x*log(d + e*x)**2 +
 6*b**3*f**2*n**3*x*log(d + e*x) - 6*b**3*f**2*n**3*x + 3*b**3*f**2*n**2*x*
log(c)*log(d + e*x)**2 - 6*b**3*f**2*n**2*x*log(c)*log(d + e*x) + 6*b**3*f*
*2*n**2*x*log(c) + 3*b**3*f**2*n*x*log(c)**2*log(d + e*x) - 3*b**3*f**2*n*x
*log(c)**2 + b**3*f**2*x*log(c)**3 + b**3*f*g*n**3*x**2*log(d + e*x)**3 - 3
*b**3*f*g*n**3*x**2*log(d + e*x)**2/2 + 3*b**3*f*g*n**3*x**2*log(d + e*x)/2
 - 3*b**3*f*g*n**3*x**2/4 + 3*b**3*f*g*n**2*x**2*log(c)*log(d + e*x)**2 - 3
*b**3*f*g*n**2*x**2*log(c)*log(d + e*x) + 3*b**3*f*g*n**2*x**2*log(c)/2 + 3
*b**3*f*g*n*x**2*log(c)**2*log(d + e*x) - 3*b**3*f*g*n*x**2*log(c)**2/2 + b
**3*f*g*x**2*log(c)**3 + b**3*g**2*n**3*x**3*log(d + e*x)**3/3 - b**3*g**2*
n**3*x**3*log(d + e*x)**2/3 + 2*b**3*g**2*n**3*x**3*log(d + e*x)/9 - 2*b**3
*g**2*n**3*x**3/27 + b**3*g**2*n**2*x**3*log(c)*log(d + e*x)**2 - 2*b**3*g*
*2*n**2*x**3*log(c)*log(d + e*x)/3 + 2*b**3*g**2*n**2*x**3*log(c)/9 + b**3*
g**2*n*x**3*log(c)**2*log(d + e*x) - b**3*g**2*n*x**3*log(c)**2/3 + b**3*g*
*2*x**3*log(c)**3/3, Ne(e, 0)), ((a + b*log(c*d**n))**3*(f**2*x + f*g*x**2
+ g**2*x**3/3), True))
```

Giac [B] time = 1.35771, size = 4039, normalized size = 9.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*b^3*g^2*n^3*e^(-3)*log(x*e + d)^3 - (x*e + d)^2*b^3*d*g^2*n
^3*e^(-3)*log(x*e + d)^3 + (x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e + d)^3
- 1/3*(x*e + d)^3*b^3*g^2*n^3*e^(-3)*log(x*e + d)^2 + 3/2*(x*e + d)^2*b^3*d
*g^2*n^3*e^(-3)*log(x*e + d)^2 - 3*(x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e
 + d)^2 + (x*e + d)^2*b^3*f*g*n^3*e^(-2)*log(x*e + d)^3 - 2*(x*e + d)*b^3*d
*f*g*n^3*e^(-2)*log(x*e + d)^3 + (x*e + d)^3*b^3*g^2*n^2*e^(-3)*log(x*e + d
)^2*log(c) - 3*(x*e + d)^2*b^3*d*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 3*(
x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(x*e + d)^2*log(c) + 2/9*(x*e + d)^3*b^3
*g^2*n^3*e^(-3)*log(x*e + d) - 3/2*(x*e + d)^2*b^3*d*g^2*n^3*e^(-3)*log(x*e
 + d) + 6*(x*e + d)*b^3*d^2*g^2*n^3*e^(-3)*log(x*e + d) - 3/2*(x*e + d)^2*b
^3*f*g*n^3*e^(-2)*log(x*e + d)^2 + 6*(x*e + d)*b^3*d*f*g*n^3*e^(-2)*log(x*e
 + d)^2 + (x*e + d)^3*a*b^2*g^2*n^2*e^(-3)*log(x*e + d)^2 - 3*(x*e + d)^2*a
*b^2*d*g^2*n^2*e^(-3)*log(x*e + d)^2 + 3*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3)
*log(x*e + d)^2 + (x*e + d)*b^3*f^2*n^3*e^(-1)*log(x*e + d)^3 - 2/3*(x*e +
d)^3*b^3*g^2*n^2*e^(-3)*log(x*e + d)*log(c) + 3*(x*e + d)^2*b^3*d*g^2*n^2*e
^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(x*e + d)
*log(c) + 3*(x*e + d)^2*b^3*f*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 6*(x*e +
 d)*b^3*d*f*g*n^2*e^(-2)*log(x*e + d)^2*log(c) + (x*e + d)^3*b^3*g^2*n*e^(-
3)*log(x*e + d)*log(c)^2 - 3*(x*e + d)^2*b^3*d*g^2*n*e^(-3)*log(x*e + d)*lo
g(c)^2 + 3*(x*e + d)*b^3*d^2*g^2*n*e^(-3)*log(x*e + d)*log(c)^2 - 2/27*(x*e
 + d)^3*b^3*g^2*n^3*e^(-3) + 3/4*(x*e + d)^2*b^3*d*g^2*n^3*e^(-3) - 6*(x*e
+ d)*b^3*d^2*g^2*n^3*e^(-3) + 3/2*(x*e + d)^2*b^3*f*g*n^3*e^(-2)*log(x*e +
d) - 12*(x*e + d)*b^3*d*f*g*n^3*e^(-2)*log(x*e + d) - 2/3*(x*e + d)^3*a*b^2
*g^2*n^2*e^(-3)*log(x*e + d) + 3*(x*e + d)^2*a*b^2*d*g^2*n^2*e^(-3)*log(x*e
 + d) - 6*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3)*log(x*e + d) - 3*(x*e + d)*b^3
*f^2*n^3*e^(-1)*log(x*e + d)^2 + 3*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2)*log(x*e
 + d)^2 - 6*(x*e + d)*a*b^2*d*f*g*n^2*e^(-2)*log(x*e + d)^2 + 2/9*(x*e + d)
^3*b^3*g^2*n^2*e^(-3)*log(c) - 3/2*(x*e + d)^2*b^3*d*g^2*n^2*e^(-3)*log(c)
+ 6*(x*e + d)*b^3*d^2*g^2*n^2*e^(-3)*log(c) - 3*(x*e + d)^2*b^3*f*g*n^2*e^(
-2)*log(x*e + d)*log(c) + 12*(x*e + d)*b^3*d*f*g*n^2*e^(-2)*log(x*e + d)*lo
g(c) + 2*(x*e + d)^3*a*b^2*g^2*n*e^(-3)*log(x*e + d)*log(c) - 6*(x*e + d)^2
*a*b^2*d*g^2*n*e^(-3)*log(x*e + d)*log(c) + 6*(x*e + d)*a*b^2*d^2*g^2*n*e^(
-3)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f^2*n^2*e^(-1)*log(x*e + d)^2*log
(c) - 1/3*(x*e + d)^3*b^3*g^2*n*e^(-3)*log(c)^2 + 3/2*(x*e + d)^2*b^3*d*g^2
*n*e^(-3)*log(c)^2 - 3*(x*e + d)*b^3*d^2*g^2*n*e^(-3)*log(c)^2 + 3*(x*e + d
)^2*b^3*f*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*d*f*g*n*e^(-2)
*log(x*e + d)*log(c)^2 + 1/3*(x*e + d)^3*b^3*g^2*e^(-3)*log(c)^3 - (x*e + d
)^2*b^3*d*g^2*e^(-3)*log(c)^3 + (x*e + d)*b^3*d^2*g^2*e^(-3)*log(c)^3 - 3/4
*(x*e + d)^2*b^3*f*g*n^3*e^(-2) + 12*(x*e + d)*b^3*d*f*g*n^3*e^(-2) + 2/9*(
x*e + d)^3*a*b^2*g^2*n^2*e^(-3) - 3/2*(x*e + d)^2*a*b^2*d*g^2*n^2*e^(-3) +
6*(x*e + d)*a*b^2*d^2*g^2*n^2*e^(-3) + 6*(x*e + d)*b^3*f^2*n^3*e^(-1)*log(x
*e + d) - 3*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2)*log(x*e + d) + 12*(x*e + d)*a*
b^2*d*f*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)^3*a^2*b*g^2*n*e^(-3)*log(x*e
+ d) - 3*(x*e + d)^2*a^2*b*d*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a^2*b*
d^2*g^2*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*a*b^2*f^2*n^2*e^(-1)*log(x*e +
d)^2 + 3/2*(x*e + d)^2*b^3*f*g*n^2*e^(-2)*log(c) - 12*(x*e + d)*b^3*d*f*g*n
^2*e^(-2)*log(c) - 2/3*(x*e + d)^3*a*b^2*g^2*n*e^(-3)*log(c) + 3*(x*e + d)^
2*a*b^2*d*g^2*n*e^(-3)*log(c) - 6*(x*e + d)*a*b^2*d^2*g^2*n*e^(-3)*log(c) -
 6*(x*e + d)*b^3*f^2*n^2*e^(-1)*log(x*e + d)*log(c) + 6*(x*e + d)^2*a*b^2*f
*g*n*e^(-2)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^2*d*f*g*n*e^(-2)*log(x*e
```

```
 + d)*log(c) - 3/2*(x*e + d)^2*b^3*f*g*n*e^(-2)*log(c)^2 + 6*(x*e + d)*b^3*
d*f*g*n*e^(-2)*log(c)^2 + (x*e + d)^3*a*b^2*g^2*e^(-3)*log(c)^2 - 3*(x*e +
d)^2*a*b^2*d*g^2*e^(-3)*log(c)^2 + 3*(x*e + d)*a*b^2*d^2*g^2*e^(-3)*log(c)^
2 + 3*(x*e + d)*b^3*f^2*n*e^(-1)*log(x*e + d)*log(c)^2 + (x*e + d)^2*b^3*f*
g*e^(-2)*log(c)^3 - 2*(x*e + d)*b^3*d*f*g*e^(-2)*log(c)^3 - 6*(x*e + d)*b^3
*f^2*n^3*e^(-1) + 3/2*(x*e + d)^2*a*b^2*f*g*n^2*e^(-2) - 12*(x*e + d)*a*b^2
*d*f*g*n^2*e^(-2) - 1/3*(x*e + d)^3*a^2*b*g^2*n*e^(-3) + 3/2*(x*e + d)^2*a^
2*b*d*g^2*n*e^(-3) - 3*(x*e + d)*a^2*b*d^2*g^2*n*e^(-3) - 6*(x*e + d)*a*b^2
*f^2*n^2*e^(-1)*log(x*e + d) + 3*(x*e + d)^2*a^2*b*f*g*n*e^(-2)*log(x*e + d
) - 6*(x*e + d)*a^2*b*d*f*g*n*e^(-2)*log(x*e + d) + 6*(x*e + d)*b^3*f^2*n^2
*e^(-1)*log(c) - 3*(x*e + d)^2*a*b^2*f*g*n*e^(-2)*log(c) + 12*(x*e + d)*a*b
^2*d*f*g*n*e^(-2)*log(c) + (x*e + d)^3*a^2*b*g^2*e^(-3)*log(c) - 3*(x*e + d
)^2*a^2*b*d*g^2*e^(-3)*log(c) + 3*(x*e + d)*a^2*b*d^2*g^2*e^(-3)*log(c) + 6
*(x*e + d)*a*b^2*f^2*n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*f^2*n*e
^(-1)*log(c)^2 + 3*(x*e + d)^2*a*b^2*f*g*e^(-2)*log(c)^2 - 6*(x*e + d)*a*b^
2*d*f*g*e^(-2)*log(c)^2 + (x*e + d)*b^3*f^2*e^(-1)*log(c)^3 + 6*(x*e + d)*a
*b^2*f^2*n^2*e^(-1) - 3/2*(x*e + d)^2*a^2*b*f*g*n*e^(-2) + 6*(x*e + d)*a^2*
b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a^3*g^2*e^(-3) - (x*e + d)^2*a^3*d*g^2*e
^(-3) + (x*e + d)*a^3*d^2*g^2*e^(-3) + 3*(x*e + d)*a^2*b*f^2*n*e^(-1)*log(x
*e + d) - 6*(x*e + d)*a*b^2*f^2*n*e^(-1)*log(c) + 3*(x*e + d)^2*a^2*b*f*g*e
^(-2)*log(c) - 6*(x*e + d)*a^2*b*d*f*g*e^(-2)*log(c) + 3*(x*e + d)*a*b^2*f^
2*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f^2*n*e^(-1) + (x*e + d)^2*a^3*f*g*e^
(-2) - 2*(x*e + d)*a^3*d*f*g*e^(-2) + 3*(x*e + d)*a^2*b*f^2*e^(-1)*log(c) +
 (x*e + d)*a^3*f^2*e^(-1)
```

3.54 $\int (f+gx)(a+b\log(c(d+ex)^n))^3\,dx$

Optimal. Leaf size=265

$$\frac{3b^2gn^2(d+ex)^2(a+b\log(c(d+ex)^n))}{4e^2}+\frac{6ab^2n^2x(ef-dg)}{e}-\frac{3bn(d+ex)(ef-dg)(a+b\log(c(d+ex)^n))^2}{e^2}+\frac{(d+e\text{:}}{}$$

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

Rubi [A] time = 0.218767, antiderivative size = 265, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{3b^2gn^2(d+ex)^2(a+b\log(c(d+ex)^n))}{4e^2}+\frac{6ab^2n^2x(ef-dg)}{e}-\frac{3bn(d+ex)(ef-dg)(a+b\log(c(d+ex)^n))^2}{e^2}+\frac{(d+e\text{:}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Rule 2401

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rule 2390

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

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx = \int\left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}\right)dx$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(c(d+ex)^n\right)\right)^3\,d}{e}$$

$$=\frac{g\,\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^3\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\text{Subst}\left(\int\left(a+b\log(c\right.\right.}{e^2}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e^2}-\frac{3bgn(d+ex)^2\left(a+b\log(c(d\right.}{4e^2}$$

$$=\frac{6ab^2(ef-dg)n^2x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{3b^2gn^2(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{4e^2}$$

$$=\frac{6ab^2(ef-dg)n^2x}{e}-\frac{6b^3(ef-dg)n^3x}{e}-\frac{3b^3gn^3(d+ex)^2}{8e^2}+\frac{6b^3(ef-dg)n^2(d+}{e^2}$$

Mathematica [A] time = 0.113686, size = 201, normalized size = 0.76

$$\frac{8(d+ex)(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-24bn(ef-dg)\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(ex(a-bn)+b(d+e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^3,x]
```

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

Maple [C] time = 1.192, size = 11547, normalized size = 43.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^3,x)
```

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

Maxima [B] time = 1.61373, size = 894, normalized size = 3.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b^3*g*x^2*log((e*x + d)^n*c)^3 + 3/2*a*b^2*g*x^2*log((e*x + d)^n*c)^2 +
 b^3*f*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*f*n*(x/e - d*log(e*x + d)/e^2) -
3/4*a^2*b*e*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 3/2*a^2*b*
g*x^2*log((e*x + d)^n*c) + 3*a*b^2*f*x*log((e*x + d)^n*c)^2 + 1/2*a^3*g*x^2
 + 3*a^2*b*f*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log
((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a*b^
2*f - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(
e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*
log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*b^3*f
 - 3/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^
n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/
e^2)*a*b^2*g - 1/8*(6*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*lo
g((e*x + d)^n*c)^2 + e*n*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*
x + d)^2 - 42*d*e*x + 42*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log
(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3*
g + a^3*f*x
```

Fricas [B] time = 2.20802, size = 1925, normalized size = 7.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(4*(b^3*e^2*g*n^3*x^2 + 2*b^3*e^2*f*n^3*x + (2*b^3*d*e*f - b^3*d^2*g)*n
^3)*log(e*x + d)^3 + 4*(b^3*e^2*g*x^2 + 2*b^3*e^2*f*x)*log(c)^3 - (3*b^3*e^
2*g*n^3 - 6*a*b^2*e^2*g*n^2 + 6*a^2*b*e^2*g*n - 4*a^3*e^2*g)*x^2 - 6*((4*b^
3*d*e*f - 3*b^3*d^2*g)*n^3 - 2*(2*a*b^2*d*e*f - a*b^2*d^2*g)*n^2 + (b^3*e^2
*g*n^3 - 2*a*b^2*e^2*g*n^2)*x^2 - 2*(2*a*b^2*e^2*f*n^2 - (2*b^3*e^2*f - b^3
*d*e*g)*n^3)*x - 2*(b^3*e^2*g*n^2*x^2 + 2*b^3*e^2*f*n^2*x + (2*b^3*d*e*f -
b^3*d^2*g)*n^2)*log(c))*log(e*x + d)^2 - 6*((b^3*e^2*g*n - 2*a*b^2*e^2*g)*x
^2 - 2*(2*a*b^2*e^2*f - (2*b^3*e^2*f - b^3*d*e*g)*n)*x)*log(c)^2 + 2*(4*a^3
*e^2*f - 3*(8*b^3*e^2*f - 7*b^3*d*e*g)*n^3 + 6*(4*a*b^2*e^2*f - 3*a*b^2*d*e
*g)*n^2 - 6*(2*a^2*b*e^2*f - a^2*b*d*e*g)*n)*x + 6*((8*b^3*d*e*f - 7*b^3*d^
2*g)*n^3 - 2*(4*a*b^2*d*e*f - 3*a*b^2*d^2*g)*n^2 + (b^3*e^2*g*n^3 - 2*a*b^2
```

```
*e^2*g*n^2 + 2*a^2*b*e^2*g*n)*x^2 + 2*(b^3*e^2*g*n*x^2 + 2*b^3*e^2*f*n*x +
(2*b^3*d*e*f - b^3*d^2*g)*n)*log(c)^2 + 2*(2*a^2*b*d*e*f - a^2*b*d^2*g)*n +
 2*(2*a^2*b*e^2*f*n + (4*b^3*e^2*f - 3*b^3*d*e*g)*n^3 - 2*(2*a*b^2*e^2*f -
a*b^2*d*e*g)*n^2)*x - 2*((4*b^3*d*e*f - 3*b^3*d^2*g)*n^2 + (b^3*e^2*g*n^2 -
 2*a*b^2*e^2*g*n)*x^2 - 2*(2*a*b^2*d*e*f - a*b^2*d^2*g)*n - 2*(2*a*b^2*e^2*
f*n - (2*b^3*e^2*f - b^3*d*e*g)*n^2)*x)*log(c))*log(e*x + d) + 6*((b^3*e^2*
g*n^2 - 2*a*b^2*e^2*g*n + 2*a^2*b*e^2*g)*x^2 + 2*(2*a^2*b*e^2*f + (4*b^3*e^
2*f - 3*b^3*d*e*g)*n^2 - 2*(2*a*b^2*e^2*f - a*b^2*d*e*g)*n)*x)*log(c))/e^2
```

Sympy [A] time = 9.59272, size = 1479, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Piecewise((a**3*f*x + a**3*g*x**2/2 - 3*a**2*b*d**2*g*n*log(d + e*x)/(2*e**
2) + 3*a**2*b*d*f*n*log(d + e*x)/e + 3*a**2*b*d*g*n*x/(2*e) + 3*a**2*b*f*n*
x*log(d + e*x) - 3*a**2*b*f*n*x + 3*a**2*b*f*x*log(c) + 3*a**2*b*g*n*x**2*l
og(d + e*x)/2 - 3*a**2*b*g*n*x**2/4 + 3*a**2*b*g*x**2*log(c)/2 - 3*a*b**2*d
**2*g*n**2*log(d + e*x)**2/(2*e**2) + 9*a*b**2*d**2*g*n**2*log(d + e*x)/(2*
e**2) - 3*a*b**2*d**2*g*n*log(c)*log(d + e*x)/e**2 + 3*a*b**2*d*f*n**2*log(
d + e*x)**2/e - 6*a*b**2*d*f*n**2*log(d + e*x)/e + 6*a*b**2*d*f*n*log(c)*lo
g(d + e*x)/e + 3*a*b**2*d*g*n**2*x*log(d + e*x)/e - 9*a*b**2*d*g*n**2*x/(2*
e) + 3*a*b**2*d*g*n*x*log(c)/e + 3*a*b**2*f*n**2*x*log(d + e*x)**2 - 6*a*b*
*2*f*n**2*x*log(d + e*x) + 6*a*b**2*f*n**2*x + 6*a*b**2*f*n*x*log(c)*log(d
+ e*x) - 6*a*b**2*f*n*x*log(c) + 3*a*b**2*f*x*log(c)**2 + 3*a*b**2*g*n**2*x
**2*log(d + e*x)**2/2 - 3*a*b**2*g*n**2*x**2*log(d + e*x)/2 + 3*a*b**2*g*n*
*2*x**2/4 + 3*a*b**2*g*n*x**2*log(c)*log(d + e*x) - 3*a*b**2*g*n*x**2*log(c
)/2 + 3*a*b**2*g*x**2*log(c)**2/2 - b**3*d**2*g*n**3*log(d + e*x)**3/(2*e**
2) + 9*b**3*d**2*g*n**3*log(d + e*x)**2/(4*e**2) - 21*b**3*d**2*g*n**3*log(
d + e*x)/(4*e**2) - 3*b**3*d**2*g*n**2*log(c)*log(d + e*x)**2/(2*e**2) + 9*
b**3*d**2*g*n**2*log(c)*log(d + e*x)/(2*e**2) - 3*b**3*d**2*g*n*log(c)**2*l
og(d + e*x)/(2*e**2) + b**3*d*f*n**3*log(d + e*x)**3/e - 3*b**3*d*f*n**3*lo
g(d + e*x)**2/e + 6*b**3*d*f*n**3*log(d + e*x)/e + 3*b**3*d*f*n**2*log(c)*l
og(d + e*x)**2/e - 6*b**3*d*f*n**2*log(c)*log(d + e*x)/e + 3*b**3*d*f*n*log
(c)**2*log(d + e*x)/e + 3*b**3*d*g*n**3*x*log(d + e*x)**2/(2*e) - 9*b**3*d*
g*n**3*x*log(d + e*x)/(2*e) + 21*b**3*d*g*n**3*x/(4*e) + 3*b**3*d*g*n**2*x*
log(c)*log(d + e*x)/e - 9*b**3*d*g*n**2*x*log(c)/(2*e) + 3*b**3*d*g*n*x*log
(c)**2/(2*e) + b**3*f*n**3*x*log(d + e*x)**3 - 3*b**3*f*n**3*x*log(d + e*x)
**2 + 6*b**3*f*n**3*x*log(d + e*x) - 6*b**3*f*n**3*x + 3*b**3*f*n**2*x*log(
c)*log(d + e*x)**2 - 6*b**3*f*n**2*x*log(c)*log(d + e*x) + 6*b**3*f*n**2*x*
log(c) + 3*b**3*f*n*x*log(c)**2*log(d + e*x) - 3*b**3*f*n*x*log(c)**2 + b**
3*f*x*log(c)**3 + b**3*g*n**3*x**2*log(d + e*x)**3/2 - 3*b**3*g*n**3*x**2*l
og(d + e*x)**2/4 + 3*b**3*g*n**3*x**2*log(d + e*x)/4 - 3*b**3*g*n**3*x**2/8
 + 3*b**3*g*n**2*x**2*log(c)*log(d + e*x)**2/2 - 3*b**3*g*n**2*x**2*log(c)*
log(d + e*x)/2 + 3*b**3*g*n**2*x**2*log(c)/4 + 3*b**3*g*n*x**2*log(c)**2*lo
g(d + e*x)/2 - 3*b**3*g*n*x**2*log(c)**2/4 + b**3*g*x**2*log(c)**3/2, Ne(e,
 0)), ((a + b*log(c*d**n))**3*(f*x + g*x**2/2), True))
```

Giac [B] time = 1.30678, size = 1824, normalized size = 6.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x*e + d)^2*b^3*g*n^3*e^(-2)*log(x*e + d)^3 - (x*e + d)*b^3*d*g*n^3*e^(
-2)*log(x*e + d)^3 - 3/4*(x*e + d)^2*b^3*g*n^3*e^(-2)*log(x*e + d)^2 + 3*(x
*e + d)*b^3*d*g*n^3*e^(-2)*log(x*e + d)^2 + (x*e + d)*b^3*f*n^3*e^(-1)*log(
x*e + d)^3 + 3/2*(x*e + d)^2*b^3*g*n^2*e^(-2)*log(x*e + d)^2*log(c) - 3*(x*
e + d)*b^3*d*g*n^2*e^(-2)*log(x*e + d)^2*log(c) + 3/4*(x*e + d)^2*b^3*g*n^3
*e^(-2)*log(x*e + d) - 6*(x*e + d)*b^3*d*g*n^3*e^(-2)*log(x*e + d) - 3*(x*e
 + d)*b^3*f*n^3*e^(-1)*log(x*e + d)^2 + 3/2*(x*e + d)^2*a*b^2*g*n^2*e^(-2)*
log(x*e + d)^2 - 3*(x*e + d)*a*b^2*d*g*n^2*e^(-2)*log(x*e + d)^2 - 3/2*(x*e
 + d)^2*b^3*g*n^2*e^(-2)*log(x*e + d)*log(c) + 6*(x*e + d)*b^3*d*g*n^2*e^(-
2)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*f*n^2*e^(-1)*log(x*e + d)^2*log(c)
 + 3/2*(x*e + d)^2*b^3*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 3*(x*e + d)*b^3*d
*g*n*e^(-2)*log(x*e + d)*log(c)^2 - 3/8*(x*e + d)^2*b^3*g*n^3*e^(-2) + 6*(x
*e + d)*b^3*d*g*n^3*e^(-2) + 6*(x*e + d)*b^3*f*n^3*e^(-1)*log(x*e + d) - 3/
2*(x*e + d)^2*a*b^2*g*n^2*e^(-2)*log(x*e + d) + 6*(x*e + d)*a*b^2*d*g*n^2*e
^(-2)*log(x*e + d) + 3*(x*e + d)*a*b^2*f*n^2*e^(-1)*log(x*e + d)^2 + 3/4*(x
*e + d)^2*b^3*g*n^2*e^(-2)*log(c) - 6*(x*e + d)*b^3*d*g*n^2*e^(-2)*log(c) -
 6*(x*e + d)*b^3*f*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)^2*a*b^2*g*n
*e^(-2)*log(x*e + d)*log(c) - 6*(x*e + d)*a*b^2*d*g*n*e^(-2)*log(x*e + d)*l
og(c) - 3/4*(x*e + d)^2*b^3*g*n*e^(-2)*log(c)^2 + 3*(x*e + d)*b^3*d*g*n*e^(
-2)*log(c)^2 + 3*(x*e + d)*b^3*f*n*e^(-1)*log(x*e + d)*log(c)^2 + 1/2*(x*e
+ d)^2*b^3*g*e^(-2)*log(c)^3 - (x*e + d)*b^3*d*g*e^(-2)*log(c)^3 - 6*(x*e +
 d)*b^3*f*n^3*e^(-1) + 3/4*(x*e + d)^2*a*b^2*g*n^2*e^(-2) - 6*(x*e + d)*a*b
^2*d*g*n^2*e^(-2) - 6*(x*e + d)*a*b^2*f*n^2*e^(-1)*log(x*e + d) + 3/2*(x*e
+ d)^2*a^2*b*g*n*e^(-2)*log(x*e + d) - 3*(x*e + d)*a^2*b*d*g*n*e^(-2)*log(x
*e + d) + 6*(x*e + d)*b^3*f*n^2*e^(-1)*log(c) - 3/2*(x*e + d)^2*a*b^2*g*n*e
^(-2)*log(c) + 6*(x*e + d)*a*b^2*d*g*n*e^(-2)*log(c) + 6*(x*e + d)*a*b^2*f*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*f*n*e^(-1)*log(c)^2 + 3/2*(x
*e + d)^2*a*b^2*g*e^(-2)*log(c)^2 - 3*(x*e + d)*a*b^2*d*g*e^(-2)*log(c)^2 +
 (x*e + d)*b^3*f*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*f*n^2*e^(-1) - 3/4*(x*
e + d)^2*a^2*b*g*n*e^(-2) + 3*(x*e + d)*a^2*b*d*g*n*e^(-2) + 3*(x*e + d)*a^
2*b*f*n*e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*f*n*e^(-1)*log(c) + 3/2*(x*
e + d)^2*a^2*b*g*e^(-2)*log(c) - 3*(x*e + d)*a^2*b*d*g*e^(-2)*log(c) + 3*(x
*e + d)*a*b^2*f*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*f*n*e^(-1) + 1/2*(x*e +
 d)^2*a^3*g*e^(-2) - (x*e + d)*a^3*d*g*e^(-2) + 3*(x*e + d)*a^2*b*f*e^(-1)*
log(c) + (x*e + d)*a^3*f*e^(-1)
```

3.55 $\int (a+b\log(c(d+ex)^n))^3\,dx$

Optimal. Leaf size=99

$$6ab^2n^2x-\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e}+\frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e}-6b^3$$

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

Rubi [A] time = 0.0524308, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$6ab^2n^2x-\frac{3bn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^3}{e}+\frac{6b^3n^2(d+ex)\log(c(d+ex)^n)}{e}-6b^3$$

Antiderivative was successfully verified.

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

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

Rule 2389

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

Rule 2296

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

Rule 2295

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

Rubi steps

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

Mathematica [A] time = 0.0215956, size = 85, normalized size = 0.86

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3-3bn\left((d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2-2bn\left(ex(a-bn)+b(d+ex)\log\left(c(d+ex)^n\right)\right)\right)}{e}$$

Antiderivative was successfully verified.

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

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

Maple [C] time = 0.185, size = 4872, normalized size = 49.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 6*ln(c)*b^3*n^2*x+3*ln(c)*a^2*b*x+3*ln(c)^2*a*b^2*x-3*ln(c)^2*b^3*n*x+ln(c)
^3*b^3*x+3/4*b*(4*a^2*e*x-4*b^2*d*n^2*ln(e*x+d)^2+8*ln(e*x+d)*a*b*d*n-8*ln(
e*x+d)*b^2*d*n^2+8*b^2*e*n^2*x-Pi^2*b^2*e*x*csgn(I*c*(e*x+d)^n)^6-Pi^2*b^2*
e*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^5+4*ln(c)^2*b^2*e*x+4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2+4*I*ln(c)*Pi*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+8*ln(c)*
a*b*e*x-8*ln(c)*b^2*e*n*x-Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)
^n)^4+2*Pi^2*b^2*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+8*ln(e*x+d)*ln
(c)*b^2*d*n+4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*a*b*e*x*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2+4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2+2*Pi^2*b^2*e*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^3+2*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+4*I*P
i*b^2*e*n*x*csgn(I*c*(e*x+d)^n)^3-4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*c*(e*x+d)
^n)^3-4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-4*I*Pi*b^2*e*n*x*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-8*a*b*e*n*x-Pi^2*b^2*e*x*csgn(I*c)^2*c
sgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+4*I*Pi*b^2*e*n*x*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-4*I*Pi*a*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)-4*I*ln(e*x+d)*Pi*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-4*I*ln(c)*Pi*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)-4*I*Pi*a*b*e*x*csgn(I*c*(e*x+d)^n)^3-4*I*ln(c)*Pi*b^2*e*x*csgn(I
*c*(e*x+d)^n)^3-4*Pi^2*b^2*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^4)/e*ln((e*x+d)^n)+3/2*b^2*(-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)+I*Pi*b*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*x*csgn(I*c*(e*x+d)^n)^3+2*ln(c
)*b*e*x+2*ln(e*x+d)*b*d*n-2*b*e*n*x+2*a*e*x)/e*ln((e*x+d)^n)^2-3*a^2*b*n*x+
6*b^3*d*n^3/e*ln(e*x+d)+a^3*x-3/4/e*ln(e*x+d)*Pi^2*b^3*d*n*csgn(I*c*(e*x+d)
^n)^6+6/e*ln(c)*ln(e*x+d)*a*b^2*d*n+3/2*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^3+b^3*x*ln((e*x+d)^n)^3-3/4/e*ln(e*x+d)*Pi^2*b^
3*d*n*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2/e*ln(e*x+d)
*Pi^2*b^3*d*n*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+3/2/e*ln(
e*x+d)*Pi^2*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3/e
*ln(e*x+d)*Pi^2*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-3
*I/e*ln(e*x+d)*ln(c)*Pi*b^3*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)-3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)+6*a*b^2*n^2*x+1/e*b^3*d*n^3*ln(e*x+d)^3+3/e*b^3*d*n^3*ln(e*x+d)^2-3/
```

4*ln(c)*Pi^2*b^3*x*csgn(I*c*(e*x+d)^n)^6+3/4*Pi^2*b^3*n*x*csgn(I*c*(e*x+d)^
n)^6-3/4*Pi^2*a*b^2*x*csgn(I*c*(e*x+d)^n)^6-6*ln(c)*a*b^2*n*x+1/8*I*Pi^3*b^
3*x*csgn(I*c*(e*x+d)^n)^9-3/4*ln(c)*Pi^2*b^3*x*csgn(I*c)^2*csgn(I*c*(e*x+d)
^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4*ln(c)*Pi^2*b
^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*ln(c)*Pi^2*b^3*x*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+3/4*Pi^2*b^3*n*x*csgn(I*c)^2*csgn(I*c*(e*x
+d)^n)^4-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+3/4*Pi^2*b^3*n*x*
csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn
(I*c*(e*x+d)^n)^3-3/2*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e
*x+d)^2-3/2*I/e*Pi*b^3*d*n^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x
+d)^2-3*I/e*ln(e*x+d)*ln(c)*Pi*b^3*d*n*csgn(I*c*(e*x+d)^n)^3-3*I/e*Pi*b^3*d
*n^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)-3*I/e*Pi*b^3*d*n^2*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*ln(e*x+d)+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*a*b^2*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)+3*I/e*Pi*b^3*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)*ln(e*x+d)+3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2+3*I/e*ln(e*x+d)*Pi*a*b^2*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
-3/4/e*ln(e*x+d)*Pi^2*b^3*d*n*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2/e*ln(e*
x+d)*Pi^2*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-3/4/e*ln(e*x+d)*Pi^2*b^3*
d*n*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2/e*ln(e*x+d)*Pi^2*b^3*d*n*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+3/2*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+
d)^n)^3*ln(e*x+d)^2+3*I/e*Pi*b^3*d*n^2*csgn(I*c*(e*x+d)^n)^3*ln(e*x+d)-3*I*
Pi*a*b^2*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*a*b^2*n*x*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-3*I*ln(c)*Pi*b^3*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3*I*ln(c)
*Pi*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b^3*n^2*x*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*ln(c)*Pi*a*b^2*x*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+3*I*ln(c)*Pi*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-1/8*I*Pi^3*b^3*x*csgn(I*(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3
*b^3*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^8-3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c*(e*x+d)^n)^3
-3*I*Pi*b^3*n^2*x*csgn(I*c*(e*x+d)^n)^3-3/2*I*Pi*a^2*b*x*csgn(I*c*(e*x+d)^n
)^3-3/2*Pi^2*b^3*n*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/4*Pi^2*a*b^2
*x*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+3/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^5-3/4*Pi^2*a*b^2*x*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/2*P
i^2*a*b^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/e*ln(c)*b^3*d*n^2*ln(
e*x+d)^2+3/e*ln(c)^2*ln(e*x+d)*b^3*d*n-6/e*ln(c)*ln(e*x+d)*b^3*d*n^2-3/e*a*
b^2*d*n^2*ln(e*x+d)^2-6/e*ln(e*x+d)*a*b^2*d*n^2+3/e*ln(e*x+d)*a^2*b*d*n-1/8
*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)^
2*csgn(I*c*(e*x+d)^n)^7-3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^8-6*
b^3*n^3*x+3*I*ln(c)*Pi*b^3*n*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*b^3*n^2*x*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b^3*n^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2-3*I*ln(c)*Pi*a*b^2*x*csgn(I*c*(e*x+d)^n)^3+3*I*Pi*a*b^2*n*x*csgn(I
c(e*x+d)^n)^3+3/2*I*Pi*a^2*b*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/2*I*Pi*a
^2*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I*Pi^3*b^3*x*csgn(I*c)^3
csgn(I(e*x+d)^n)^3*csgn(I*c*(e*x+d)^n)^3-3/8*I*Pi^3*b^3*x*csgn(I*c)^3*csg
n(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+3/8*I*Pi^3*b^3*x*csgn(I*c)^3*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-3/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d
)^n)^3*csgn(I*c*(e*x+d)^n)^4+9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)
^2*csgn(I*c*(e*x+d)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^6+3/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^3*csgn(I*c*
(e*x+d)^n)^5-9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d
)^n)^6+9/8*I*Pi^3*b^3*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^7+3
/2*Pi^2*a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3*Pi^2*
a*b^2*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-3/4*ln(c)*Pi^2*b^
3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+3/2*ln(c)*Pi^2*b^
3*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+3/2*ln(c)*Pi^2*b^3*

```
x*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-3*ln(c)*Pi^2*b^3*x*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+3/4*Pi^2*b^3*n*x*csgn(I*c)^
2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-3/2*Pi^2*b^3*n*x*csgn(I*c)^2*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-3/2*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*(e*
x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+3*Pi^2*b^3*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^4-3/4*Pi^2*a*b^2*x*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn
(I*c*(e*x+d)^n)^2+3/2*I*ln(c)^2*Pi*b^3*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3/
2*I*ln(c)^2*Pi*b^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+3/2*I/e*Pi*b^3
*d*n^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*ln(e*x+d)^2+3*I/e*ln
(e*x+d)*ln(c)*Pi*b^3*d*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I/e*ln(e*x+d)*ln
(c)*Pi*b^3*d*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
```

Maxima [B] time = 1.29702, size = 381, normalized size = 3.85

$$b^3x\log\left((ex+d)^nc\right)^3 - 3\,a^2ben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + 3\,ab^2x\log\left((ex+d)^nc\right)^2 + 3\,a^2bx\log\left((ex+d)^nc\right) - 3\left(2\,en\left(\frac{x}{e} - \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b^3*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*n*(x/e - d*log(e*x + d)/e^2) + 3*a*b
^2*x*log((e*x + d)^n*c)^2 + 3*a^2*b*x*log((e*x + d)^n*c) - 3*(2*e*n*(x/e -
d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*lo
g(e*x + d))*n^2/e)*a*b^2 - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^
n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x
+ d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x
+ d)^n*c)/e^2))*b^3 + a^3*x
```

Fricas [B] time = 2.01939, size = 699, normalized size = 7.06

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 3.26153, size = 527, normalized size = 5.32

$$\begin{cases} a^3x + \frac{3a^2bdn\log(d+ex)}{e} + 3a^2bnx\log(d+ex) - 3a^2bnx + 3a^2bx\log(c) + \frac{3ab^2dn^2\log(d+ex)^2}{e} - \frac{6ab^2dn^2\log(d+ex)}{e} + \frac{6ab^2dn\log(\ldots}{e} \\ x\left(a + b\log(cd^n)\right)^3 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**3*x + 3*a**2*b*d*n*log(d + e*x)/e + 3*a**2*b*n*x*log(d + e*x)
 - 3*a**2*b*n*x + 3*a**2*b*x*log(c) + 3*a*b**2*d*n**2*log(d + e*x)**2/e - 6
*a*b**2*d*n**2*log(d + e*x)/e + 6*a*b**2*d*n*log(c)*log(d + e*x)/e + 3*a*b*
*2*n**2*x*log(d + e*x)**2 - 6*a*b**2*n**2*x*log(d + e*x) + 6*a*b**2*n**2*x
+ 6*a*b**2*n*x*log(c)*log(d + e*x) - 6*a*b**2*n*x*log(c) + 3*a*b**2*x*log(c
)**2 + b**3*d*n**3*log(d + e*x)**3/e - 3*b**3*d*n**3*log(d + e*x)**2/e + 6*
b**3*d*n**3*log(d + e*x)/e + 3*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 6*b**
3*d*n**2*log(c)*log(d + e*x)/e + 3*b**3*d*n*log(c)**2*log(d + e*x)/e + b**3
*n**3*x*log(d + e*x)**3 - 3*b**3*n**3*x*log(d + e*x)**2 + 6*b**3*n**3*x*log
(d + e*x) - 6*b**3*n**3*x + 3*b**3*n**2*x*log(c)*log(d + e*x)**2 - 6*b**3*n
**2*x*log(c)*log(d + e*x) + 6*b**3*n**2*x*log(c) + 3*b**3*n*x*log(c)**2*log
(d + e*x) - 3*b**3*n*x*log(c)**2 + b**3*x*log(c)**3, Ne(e, 0)), (x*(a + b*l
og(c*d**n))**3, True))
```

Giac [B] time = 1.36014, size = 552, normalized size = 5.58

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (x*e + d)*b^3*n^3*e^(-1)*log(x*e + d)^3 - 3*(x*e + d)*b^3*n^3*e^(-1)*log(x*
e + d)^2 + 3*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b
^3*n^3*e^(-1)*log(x*e + d) + 3*(x*e + d)*a*b^2*n^2*e^(-1)*log(x*e + d)^2 -
6*(x*e + d)*b^3*n^2*e^(-1)*log(x*e + d)*log(c) + 3*(x*e + d)*b^3*n*e^(-1)*l
og(x*e + d)*log(c)^2 - 6*(x*e + d)*b^3*n^3*e^(-1) - 6*(x*e + d)*a*b^2*n^2*e
^(-1)*log(x*e + d) + 6*(x*e + d)*b^3*n^2*e^(-1)*log(c) + 6*(x*e + d)*a*b^2*
n*e^(-1)*log(x*e + d)*log(c) - 3*(x*e + d)*b^3*n*e^(-1)*log(c)^2 + (x*e + d
)*b^3*e^(-1)*log(c)^3 + 6*(x*e + d)*a*b^2*n^2*e^(-1) + 3*(x*e + d)*a^2*b*n*
e^(-1)*log(x*e + d) - 6*(x*e + d)*a*b^2*n*e^(-1)*log(c) + 3*(x*e + d)*a*b^2
*e^(-1)*log(c)^2 - 3*(x*e + d)*a^2*b*n*e^(-1) + 3*(x*e + d)*a^2*b*e^(-1)*lo
g(c) + (x*e + d)*a^3*e^(-1)
```

3.56 $\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx} dx$

Optimal. Leaf size=158

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{6b^3n^3\text{Po}}{}$$

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

Rubi [A] time = 0.176891, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{6b^3n^3\text{Po}}{}$$

Antiderivative was successfully verified.

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



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


Rule 2396

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

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

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

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3ben)\int \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3bn)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))^2\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\,dx, x, \right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{(6\ldots}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{6b\ldots}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn(a+b\log(c(d+ex)^n))^2\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{6b\ldots}{}$$

Mathematica [B] time = 0.21652, size = 335, normalized size = 2.12

$$\frac{6b^2n^2\left(-\mathrm{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)(a+b\log(c(d+ex)^n)-b\ldots}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/
(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - P
olyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(
f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyL
og[4, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

Maple [C] time = 1.01, size = 9538, normalized size = 60.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\frac{a^3\log\left(gx+f\right)}{g}+\int\frac{b^3\log\left((ex+d)^n\right)^3+b^3\log\left(c\right)^3+3\,ab^2\log\left(c\right)^2+3\,a^2b\log\left(c\right)+3\left(b^3\log\left(c\right)+ab^2\right)\log\left((ex+d)\right.}{gx+f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\mathrm{integral}\left(\frac{b^3\log\left((ex+d)^nc\right)^3+3\,ab^2\log\left((ex+d)^nc\right)^2+3\,a^2b\log\left((ex+d)^nc\right)+a^3}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int\frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^3}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

3.57 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^2}\,dx$

Optimal. Leaf size=190

$$-\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)}+\frac{6b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{3ben\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(}{g(ef-dg)}$$

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

Rubi [A] time = 0.153738, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2397, 2396, 2433, 2374, 6589}

$$-\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)}+\frac{6b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)}-\frac{3ben\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(}{g(ef-dg)}$$

Antiderivative was successfully verified.

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

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

Rule 2397

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

Rule 2396

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

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^2}\,dx = \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{(3ben)\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben\,(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} + \frac{\left(6b^2e^2n\right.}{}$$

$$\left(6b^2en^2\right.$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben\,(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} + \frac{}{}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben\,(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} - \frac{6b^2en^2\,(}{}$$

$$= \frac{(d+ex)\,(a+b\log(c(d+ex)^n))^3}{(ef-dg)(f+gx)} - \frac{3ben\,(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} - \frac{6b^2en^2\,(}{}$$

Mathematica [B] time = 0.400456, size = 410, normalized size = 2.16

$$\frac{3b^2n^2\left(\log(d+ex)\left(g(d+ex)\log(d+ex)-2e(f+gx)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)-2e(f+gx)\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)\right)(a+b\log(c(d+e}{}$$

Antiderivative was successfully verified.

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

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

```
g)*(f + g*x))
```

Maple [C] time = 1.121, size = 5626, normalized size = 29.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$3\,a^2ben\left(\frac{\log\left(ex+d\right)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-\frac{b^3\log\left((ex+d)^n\right)^3}{g^2x+fg}-\frac{3\,a^2b\log\left((ex+d)^n c\right)}{g^2x+fg}-\frac{a^3}{g^2x+fg}+\int\frac{b^3dg\log\left(c\right)^3+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 3*a^2*b*e*n*(log(e*x + d)/(e*f*g - d*g^2) - log(g*x + f)/(e*f*g - d*g^2)) -
 b^3*log((e*x + d)^n)^3/(g^2*x + f*g) - 3*a^2*b*log((e*x + d)^n*c)/(g^2*x +
 f*g) - a^3/(g^2*x + f*g) + integrate((b^3*d*g*log(c)^3 + 3*a*b^2*d*g*log(c
)^2 + 3*(a*b^2*d*g + (e*f*n + d*g*log(c))*b^3 + (a*b^2*e*g + (e*g*n + e*g*l
og(c))*b^3)*x)*log((e*x + d)^n)^2 + (b^3*e*g*log(c)^3 + 3*a*b^2*e*g*log(c)^
2)*x + 3*(b^3*d*g*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*e*g*log(c)^2 + 2*a*b
^2*e*g*log(c))*x)*log((e*x + d)^n))/(e*g^3*x^3 + d*f^2*g + (2*e*f*g^2 + d*g
^3)*x^2 + (e*f^2*g + 2*d*f*g^2)*x), x)
```

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

$$\text{integral}\left(\frac{b^3\log\left((ex+d)^n c\right)^3+3\,ab^2\log\left((ex+d)^n c\right)^2+3\,a^2b\log\left((ex+d)^n c\right)+a^3}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="fricas")
```

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

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

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^2,x, algorithm="giac")
```

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

3.58 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^3} dx$

Optimal. Leaf size=342

$$\frac{3b^2e^2n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(3,-\frac{ef-dg}{g(d+ex}\right.}{g(ef-dg)^2}$$

```
[Out] (-3*b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*(e*f - d*g)^2*(f + g*x
)) - (a + b*Log[c*(d + e*x)^n])^3/(2*g*(f + g*x)^2) + (3*b^2*e^2*n^2*(a + b
*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g)^2) - (3
*b*e^2*n*(a + b*Log[c*(d + e*x)^n])^2*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(
2*g*(e*f - d*g)^2) + (3*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -
((e*f - d*g)/(g*(d + e*x)))])/(g*(e*f - d*g)^2) + (3*b^3*e^2*n^3*PolyLog[2,
 -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^2) + (3*b^3*e^2*n^3*PolyLog[
3, -((e*f - d*g)/(g*(d + e*x)))])/(g*(e*f - d*g)^2)
```

Rubi [A] time = 0.624921, antiderivative size = 370, normalized size of antiderivative = 1.08, number of steps used = 12, number of rules used = 11, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.458, Rules used = {2398, 2411, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391}

$$-\frac{3b^2e^2n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^2}+\frac{3b^3e^2n^3\text{PolyLog}\left(3,-\frac{g(d+}{ef-}\right.}{g(ef-dg)^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*(e*f - d*g)^2*(f + g*x
)) + (e^2*(a + b*Log[c*(d + e*x)^n])^3)/(2*g*(e*f - d*g)^2) - (a + b*Log[c*
(d + e*x)^n])^3/(2*g*(f + g*x)^2) + (3*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n
])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g)^2) - (3*b*e^2*n*(a + b*Lo
g[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(2*g*(e*f - d*g)^2) + (
3*b^3*e^2*n^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^2) -
 (3*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f
- d*g))])/(g*(e*f - d*g)^2) + (3*b^3*e^2*n^3*PolyLog[3, -((g*(d + e*x))/(e*
f - d*g))])/(g*(e*f - d*g)^2)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

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

Rule 2302

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

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

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2318

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

Rule 2391

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

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^3}\,dx = -\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2} + \frac{(3ben)\int \frac{(a+b\log(c(d+ex)^n))^2}{(d+ex)(f+gx)^2}\,dx}{2g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2} + \frac{(3bn)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))^2}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx, x, d+ex\right)}{2g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2} - \frac{(3bn)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))^2}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\,dx, x, d+ex\right)}{2(ef-dg)} + \frac{(3ben)\,\mathrm{Sub}}{}$$

$$= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)} - \frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2} - \frac{(3ben)\,\mathrm{Subst}\left(\int\right.}{2}$$

$$= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)} - \frac{(a+b\log(c(d+ex)^n))^3}{2g(f+gx)^2} + \frac{3b^2e^2n^2(a+b\,\mathrm{lo}}{}$$

$$= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)} + \frac{e^2(a+b\log(c(d+ex)^n))^3}{2g(ef-dg)^2} - \frac{(a+b\log(c(d}{2g(f+}$$

$$= -\frac{3ben(d+ex)(a+b\log(c(d+ex)^n))^2}{2(ef-dg)^2(f+gx)} + \frac{e^2(a+b\log(c(d+ex)^n))^3}{2g(ef-dg)^2} - \frac{(a+b\log(c(d}{2g(f+}$$

Mathematica [A] time = 0.836331, size = 620, normalized size = 1.81

$$-\frac{3b^2n^2\left(2e^2(f+gx)^2\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-2e^2(f+gx)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)+g(d+ex)\log^2(d+ex)(dg-e(2f+gx))+2e\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] -(-3*b*e*(e*f - d*g)*n*(f + g*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
n])^2 + 3*b*(e*f - d*g)^2*n*Log[d + e*x]*(a - b*n*Log[d + e*x] + b*Log[c*(d
 + e*x)^n])^2 - 3*b*e^2*n*(f + g*x)^2*Log[d + e*x]*(a - b*n*Log[d + e*x] +
b*Log[c*(d + e*x)^n])^2 + (e*f - d*g)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d
+ e*x)^n])^3 + 3*b*e^2*n*(f + g*x)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e
*x)^n])^2*Log[f + g*x] + 3*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])*(g*(d + e*x)*(d*g - e*(2*f + g*x))*Log[d + e*x]^2 - 2*e^2*(f + g*x)^2
*Log[(e*(f + g*x))/(e*f - d*g)] + 2*e*(f + g*x)*Log[d + e*x]*(g*(d + e*x) +
 e*(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) + 2*e^2*(f + g*x)^2*PolyLog[2,
 (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(g*(d + e*x)*(d*g - e*(2*f + g*x)
)*Log[d + e*x]^3 + 3*e*(f + g*x)*Log[d + e*x]^2*(g*(d + e*x) + e*(f + g*x)*
Log[(e*(f + g*x))/(e*f - d*g)]) - 6*e^2*(f + g*x)^2*Log[d + e*x]*(Log[(e*(f
 + g*x))/(e*f - d*g)] - PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 6*e^2*(
f + g*x)^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*e^2*(f + g*x)^2*Pol
yLog[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(2*g*(e*f - d*g)^2*(f + g*x)^2)
```

Maple [F] time = 1.987, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}}{\left(gx+f\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^3,x)
```

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

$$\frac{3}{2}a^{2}ben\left(\frac{e\log\left(ex+d\right)}{e^{2}f^{2}g-2\,defg^{2}+d^{2}g^{3}}-\frac{e\log\left(gx+f\right)}{e^{2}f^{2}g-2\,defg^{2}+d^{2}g^{3}}+\frac{1}{ef^{2}g-dfg^{2}+\left(efg^{2}-dg^{3}\right)x}\right)-\frac{b^{3}\log\left(\left(ex+d\right)^{n}\right)^{3}}{2\left(g^{3}x^{2}+2\,fg^{2}x+f^{2}g\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 3/2*a^2*b*e*n*(e*log(e*x + d)/(e^2*f^2*g - 2*d*e*f*g^2 + d^2*g^3) - e*log(g
*x + f)/(e^2*f^2*g - 2*d*e*f*g^2 + d^2*g^3) + 1/(e*f^2*g - d*f*g^2 + (e*f*g
^2 - d*g^3)*x)) - 1/2*b^3*log((e*x + d)^n)^3/(g^3*x^2 + 2*f*g^2*x + f^2*g)
- 3/2*a^2*b*log((e*x + d)^n*c)/(g^3*x^2 + 2*f*g^2*x + f^2*g) - 1/2*a^3/(g^3
*x^2 + 2*f*g^2*x + f^2*g) + integrate(1/2*(2*b^3*d*g*log(c)^3 + 6*a*b^2*d*g
*log(c)^2 + 3*(2*a*b^2*d*g + (e*f*n + 2*d*g*log(c))*b^3 + (2*a*b^2*e*g + (e
*g*n + 2*e*g*log(c))*b^3)*x)*log((e*x + d)^n)^2 + 2*(b^3*e*g*log(c)^3 + 3*a
*b^2*e*g*log(c)^2)*x + 6*(b^3*d*g*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*e*g*
log(c)^2 + 2*a*b^2*e*g*log(c))*x)*log((e*x + d)^n))/(e*g^4*x^4 + d*f^3*g +
(3*e*f*g^3 + d*g^4)*x^3 + 3*(e*f^2*g^2 + d*f*g^3)*x^2 + (e*f^3*g + 3*d*f^2*
g^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{3}\log\left(\left(ex+d\right)^{n}c\right)^{3}+3\,ab^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+3\,a^{2}b\log\left(\left(ex+d\right)^{n}c\right)+a^{3}}{g^{3}x^{3}+3\,fg^{2}x^{2}+3\,f^{2}gx+f^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f)^3, x)
```

3.59 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^4}\,dx$

Optimal. Leaf size=564

$$\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)^3}-\frac{b^3e^3n^3\text{PolyLog}\left(2,-\frac{ef-dg}{g(d+ex)}\right)}{g(ef-dg)^3}+\frac{2b^3e^3n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^3}+$$

```
[Out] (b^2*e^2*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)^3*(f + g*x)
) + (b*e*n*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e*f - d*g)*(f + g*x)^2) - (b
*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*f - d*g)^3*(f + g*x)) -
(a + b*Log[c*(d + e*x)^n])^3/(3*g*(f + g*x)^3) - (b^3*e^3*n^3*Log[f + g*x])
/(g*(e*f - d*g)^3) + (2*b^2*e^3*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f +
g*x))/(e*f - d*g)])/(g*(e*f - d*g)^3) + (b^2*e^3*n^2*(a + b*Log[c*(d + e*x)
^n])*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(g*(e*f - d*g)^3) - (b*e^3*n*(a +
b*Log[c*(d + e*x)^n])^2*Log[1 + (e*f - d*g)/(g*(d + e*x))])/(g*(e*f - d*g)^
3) - (b^3*e^3*n^3*PolyLog[2, -((e*f - d*g)/(g*(d + e*x)))])/(g*(e*f - d*g)^
3) + (2*b^2*e^3*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((e*f - d*g)/(g*
(d + e*x)))])/(g*(e*f - d*g)^3) + (2*b^3*e^3*n^3*PolyLog[2, -((g*(d + e*x))
/(e*f - d*g))])/(g*(e*f - d*g)^3) + (2*b^3*e^3*n^3*PolyLog[3, -((e*f - d*g)
/(g*(d + e*x)))])/(g*(e*f - d*g)^3)
```

Rubi [A] time = 1.14029, antiderivative size = 525, normalized size of antiderivative = 0.93, number of steps used = 21, number of rules used = 15, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {2398, 2411, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391, 2319, 2301, 2314, 31}

$$-\frac{2b^2e^3n^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)^3}+\frac{3b^3e^3n^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^3}+\frac{2b^3e^3n^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g(ef-dg)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x)^4,x]
```

```
[Out] (b^2*e^2*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)^3*(f + g*x)
) - (b*e^3*n*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e*f - d*g)^3) + (b*e*n*(a
+ b*Log[c*(d + e*x)^n])^2)/(2*g*(e*f - d*g)*(f + g*x)^2) - (b*e^2*n*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*f - d*g)^3*(f + g*x)) + (e^3*(a + b*Lo
g[c*(d + e*x)^n])^3)/(3*g*(e*f - d*g)^3) - (a + b*Log[c*(d + e*x)^n])^3/(3*
g*(f + g*x)^3) - (b^3*e^3*n^3*Log[f + g*x])/(g*(e*f - d*g)^3) + (3*b^2*e^3*
n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*
g)^3) - (b*e^3*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)
])/(g*(e*f - d*g)^3) + (3*b^3*e^3*n^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g
))])/(g*(e*f - d*g)^3) - (2*b^2*e^3*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[
2, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^3) + (2*b^3*e^3*n^3*PolyLo
g[3, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)^3)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
```

```
, p}, x] && GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)^4}\,dx = -\frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} + \frac{(ben)\int \frac{(a+b\log(c(d+ex)^n))^2}{(d+ex)(f+gx)^3}\,dx}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} + \frac{(bn)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))^2}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{g}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} - \frac{(bn)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))^2}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^3}\,dx, x, d+ex\right)}{ef-dg} + \frac{(ben)\,\mathrm{Subst}}{}$$

$$= \frac{ben(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)(f+gx)^2} - \frac{(a+b\log(c(d+ex)^n))^3}{3g(f+gx)^3} - \frac{(ben)\,\mathrm{Subst}\left(\int \frac{(a+b\log(cx^n))}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^2}\right.}{(ef-dg)^2}$$

$$= \frac{ben(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)(f+gx)^2} - \frac{be^2n(d+ex)(a+b\log(c(d+ex)^n))^2}{(ef-dg)^3(f+gx)} - \frac{(a+b\log(c(d}{3g(f+g}$$

$$= \frac{b^2e^2n^2(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^3(f+gx)} + \frac{ben(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)(f+gx)^2} - \frac{be^2n(d+ex)}{(ef}$$

$$= \frac{b^2e^2n^2(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^3(f+gx)} - \frac{be^3n(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^3} + \frac{ben(a+b\log}{2g(ef-}$$

$$= \frac{b^2e^2n^2(d+ex)(a+b\log(c(d+ex)^n))}{(ef-dg)^3(f+gx)} - \frac{be^3n(a+b\log(c(d+ex)^n))^2}{2g(ef-dg)^3} + \frac{ben(a+b\log}{2g(ef-}$$

Mathematica [A] time = 1.29668, size = 843, normalized size = 1.49

$$\frac{-2(a-bn\log(d+ex)+b\log(c(d+ex)^n))^3(ef-dg)^3 - 6bn\log(d+ex)(a-bn\log(d+ex)+b\log(c(d+ex)^n))^2(ef}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x)^4,x]
```

```
[Out] (3*b*e*(e*f - d*g)^2*n*(f + g*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
n])^2 + 6*b*e^2*(e*f - d*g)*n*(f + g*x)^2*(a - b*n*Log[d + e*x] + b*Log[c*(
d + e*x)^n])^2 - 6*b*(e*f - d*g)^3*n*Log[d + e*x]*(a - b*n*Log[d + e*x] + b
*Log[c*(d + e*x)^n])^2 + 6*b*e^3*n*(f + g*x)^3*Log[d + e*x]*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])^2 - 2*(e*f - d*g)^3*(a - b*n*Log[d + e*x] +
b*Log[c*(d + e*x)^n])^3 - 6*b*e^3*n*(f + g*x)^3*(a - b*n*Log[d + e*x] + b*L
og[c*(d + e*x)^n])^2*Log[f + g*x] + 6*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log
[c*(d + e*x)^n])*(e^2*g*(d + e*x)*(f + g*x)^2 + g*(3*d*e^2*f^2 - 3*d^2*e*f*
g + d^3*g^2 + e^3*x*(3*f^2 + 3*f*g*x + g^2*x^2))*Log[d + e*x]^2 + 3*e^3*(f
+ g*x)^3*Log[(e*(f + g*x))/(e*f - d*g)] + e*(f + g*x)*Log[d + e*x]*(g^2*(d
+ e*x)^2 - 4*e*g*(d + e*x)*(f + g*x) - 2*e^2*(f + g*x)^2*Log[(e*(f + g*x))/
(e*f - d*g)]) - 2*e^3*(f + g*x)^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])
 + b^3*n^3*(2*g*(3*d*e^2*f^2 - 3*d^2*e*f*g + d^3*g^2 + e^3*x*(3*f^2 + 3*f*g
*x + g^2*x^2))*Log[d + e*x]^3 - 6*e^3*(f + g*x)^3*Log[(e*(f + g*x))/(e*f -
d*g)] + 3*e*(f + g*x)*Log[d + e*x]^2*(g^2*(d + e*x)^2 - 4*e*g*(d + e*x)*(f
```

```
+ g*x) - 2*e^2*(f + g*x)^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 18*e^3*(f + g*
x)^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] + 6*e^2*(f + g*x)^2*Log[d + e
*x]*(g*(d + e*x) + 3*e*(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)] - 2*e*(f +
g*x)*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 12*e^3*(f + g*x)^3*PolyLog
[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(6*g*(e*f - d*g)^3*(f + g*x)^3)
```

Maple [F] time = 2.224, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)^{3}}{\left(gx+f\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^4,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(\frac{2\,e^{2}\log\left(ex+d\right)}{e^{3}f^{3}g-3\,de^{2}f^{2}g^{2}+3\,d^{2}efg^{3}-d^{3}g^{4}}-\frac{2\,e^{2}\log\left(gx+f\right)}{e^{3}f^{3}g-3\,de^{2}f^{2}g^{2}+3\,d^{2}efg^{3}-d^{3}g^{4}}+\frac{2}{e^{2}f^{4}g-2\,def^{3}g^{2}+d^{2}f^{2}g^{3}+\left(e^{2}f^{2}g^{3}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="maxima")
```

```
[Out] 1/2*(2*e^2*log(e*x + d)/(e^3*f^3*g - 3*d*e^2*f^2*g^2 + 3*d^2*e*f*g^3 - d^3*
g^4) - 2*e^2*log(g*x + f)/(e^3*f^3*g - 3*d*e^2*f^2*g^2 + 3*d^2*e*f*g^3 - d^
3*g^4) + (2*e*g*x + 3*e*f - d*g)/(e^2*f^4*g - 2*d*e*f^3*g^2 + d^2*f^2*g^3 +
 (e^2*f^2*g^3 - 2*d*e*f*g^4 + d^2*g^5)*x^2 + 2*(e^2*f^3*g^2 - 2*d*e*f^2*g^3
 + d^2*f*g^4)*x))*a^2*b*e*n - 1/3*b^3*log((e*x + d)^n)^3/(g^4*x^3 + 3*f*g^3
*x^2 + 3*f^2*g^2*x + f^3*g) - a^2*b*log((e*x + d)^n*c)/(g^4*x^3 + 3*f*g^3*x
^2 + 3*f^2*g^2*x + f^3*g) - 1/3*a^3/(g^4*x^3 + 3*f*g^3*x^2 + 3*f^2*g^2*x +
f^3*g) + integrate((b^3*d*g*log(c)^3 + 3*a*b^2*d*g*log(c)^2 + (3*a*b^2*d*g
+ (e*f*n + 3*d*g*log(c))*b^3 + (3*a*b^2*e*g + (e*g*n + 3*e*g*log(c))*b^3)*x
)*log((e*x + d)^n)^2 + (b^3*e*g*log(c)^3 + 3*a*b^2*e*g*log(c)^2)*x + 3*(b^3
*d*g*log(c)^2 + 2*a*b^2*d*g*log(c) + (b^3*e*g*log(c)^2 + 2*a*b^2*e*g*log(c)
)*x)*log((e*x + d)^n))/(e*g^5*x^5 + d*f^4*g + (4*e*f*g^4 + d*g^5)*x^4 + 2*(
3*e*f^2*g^3 + 2*d*f*g^4)*x^3 + 2*(2*e*f^3*g^2 + 3*d*f^2*g^3)*x^2 + (e*f^4*g
 + 4*d*f^3*g^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$${\rm integral}\left(\frac{b^{3}\log\left(\left(ex+d\right)^{n}c\right)^{3}+3\,ab^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+3\,a^{2}b\log\left(\left(ex+d\right)^{n}c\right)+a^{3}}{g^{4}x^{4}+4\,fg^{3}x^{3}+6\,f^{2}g^{2}x^{2}+4\,f^{3}gx+f^{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g^4*x^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2 + 4*f^3*g
*x + f^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)**4,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)^{3}}{\left(gx+f\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f)^4, x)
```

3.60 $\int (f+gx)(a+b\log(c(d+ex)^n))^4\,dx$

Optimal. Leaf size=340

$$\frac{12b^2n^2(d+ex)(ef-dg)(a+b\log(c(d+ex)^n))^2}{e^2}-\frac{3b^3gn^3(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2}+\frac{3b^2gn^2(d+ex)^2(a+b\log(}{2e^2}$$

```
[Out] (-24*a*b^3*(e*f - d*g)*n^3*x)/e + (24*b^4*(e*f - d*g)*n^4*x)/e + (3*b^4*g*n
^4*(d + e*x)^2)/(4*e^2) - (24*b^4*(e*f - d*g)*n^3*(d + e*x)*Log[c*(d + e*x)
^n])/e^2 - (3*b^3*g*n^3*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (
12*b^2*(e*f - d*g)*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e^2 + (3*b^2
*g*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (4*b*(e*f - d*g)
*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e^2 - (b*g*n*(d + e*x)^2*(a + b*
Log[c*(d + e*x)^n])^3)/e^2 + ((e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^
n])^4)/e^2 + (g*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^4)/(2*e^2)
```

Rubi [A] time = 0.280602, antiderivative size = 340, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{12b^2n^2(d+ex)(ef-dg)(a+b\log(c(d+ex)^n))^2}{e^2}-\frac{3b^3gn^3(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2}+\frac{3b^2gn^2(d+ex)^2(a+b\log(}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^4,x]
```

```
[Out] (-24*a*b^3*(e*f - d*g)*n^3*x)/e + (24*b^4*(e*f - d*g)*n^4*x)/e + (3*b^4*g*n
^4*(d + e*x)^2)/(4*e^2) - (24*b^4*(e*f - d*g)*n^3*(d + e*x)*Log[c*(d + e*x)
^n])/e^2 - (3*b^3*g*n^3*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (
12*b^2*(e*f - d*g)*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e^2 + (3*b^2
*g*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (4*b*(e*f - d*g)
*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e^2 - (b*g*n*(d + e*x)^2*(a + b*
Log[c*(d + e*x)^n])^3)/e^2 + ((e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^
n])^4)/e^2 + (g*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^4)/(2*e^2)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int (f+gx)(a+b\log(c(d+ex)^n))^4\,dx = \int \left(\frac{(ef-dg)(a+b\log(c(d+ex)^n))^4}{e}+\frac{g(d+ex)(a+b\log(c(d+ex)^n))^4}{e}\right)$$

$$=\frac{g\int (d+ex)(a+b\log(c(d+ex)^n))^4\,dx}{e}+\frac{(ef-dg)\int (a+b\log(c(d+ex)^n))}{e}$$

$$=\frac{g\,\text{Subst}\left(\int x(a+b\log(cx^n))^4\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\text{Subst}\left(\int (a+b\log\right.}{e^2}$$

$$=\frac{(ef-dg)(d+ex)(a+b\log(c(d+ex)^n))^4}{e^2}+\frac{g(d+ex)^2(a+b\log(c(d+ex)^n}{2e^2}$$

$$=-\frac{4b(ef-dg)n(d+ex)(a+b\log(c(d+ex)^n))^3}{e^2}-\frac{bgn(d+ex)^2(a+b\log(c(}{e^2}$$

$$=\frac{12b^2(ef-dg)n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e^2}+\frac{3b^2gn^2(d+ex)^2(a+b\log}{2e^2}$$

$$=-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{3b^3gn^3(d+ex)^2(a+b\log(c(d+}{2e^2}$$

$$=-\frac{24ab^3(ef-dg)n^3x}{e}+\frac{24b^4(ef-dg)n^4x}{e}+\frac{3b^4gn^4(d+ex)^2}{4e^2}-\frac{24b^4(ef-dg}{}$$

Mathematica [A] time = 0.217932, size = 258, normalized size = 0.76

$$4(d+ex)(ef-dg)(a+b\log(c(d+ex)^n))^4-16bn(ef-dg)\left((d+ex)(a+b\log(c(d+ex)^n))^3-3bn\left((d+ex)(a+b\log\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^4,x]
```

```
[Out] (4*(e*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^4 + 2*g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^4 - 16*b*(e*f - d*g)*n*((d + e*x)*(a + b*Log[c*(d +
 e*x)^n])^3 - 3*b*n*((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 - 2*b*n*(e*(a -
```

```
 b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n]))) - b*g*n*(4*(d + e*x)^2*(a + b*L
og[c*(d + e*x)^n])^3 - 3*b*n*(2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2 +
b*n*(b*e*n*x*(2*d + e*x) - 2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])))))/(4*
e^2)
```

Maple [C] time = 2.669, size = 37938, normalized size = 111.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^4,x)
```

```
[Out] result too large to display
```

Maxima [B] time = 1.36211, size = 1570, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="maxima")
```

```
[Out] 1/2*b^4*g*x^2*log((e*x + d)^n*c)^4 + 2*a*b^3*g*x^2*log((e*x + d)^n*c)^3 + b
^4*f*x*log((e*x + d)^n*c)^4 + 3*a^2*b^2*g*x^2*log((e*x + d)^n*c)^2 + 4*a*b^
3*f*x*log((e*x + d)^n*c)^3 - 4*a^3*b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a^3
*b*e*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) + 2*a^3*b*g*x^2*log
((e*x + d)^n*c) + 6*a^2*b^2*f*x*log((e*x + d)^n*c)^2 + 1/2*a^4*g*x^2 + 4*a^
3*b*f*x*log((e*x + d)^n*c) - 6*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x +
 d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a^2*b^2*f -
 4*(3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x
 + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log
(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*a*b^3*f
- (4*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^3 + (e*n*((d*log(e*x
 + d)^4 + 4*d*log(e*x + d)^3 + 12*d*log(e*x + d)^2 - 24*e*x + 24*d*log(e*x
+ d))*n^2/e^3 - 4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(
e*x + d))*n*log((e*x + d)^n*c)/e^3) + 6*(d*log(e*x + d)^2 - 2*e*x + 2*d*log
(e*x + d))*n*log((e*x + d)^n*c)^2/e^2)*e*n)*b^4*f - 3/2*(2*e*n*(2*d^2*log(e
*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*lo
g(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e^2)*a^2*b^2*g - 1/2*(6*e*
n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c)^2 + e*n
*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*x + d)^2 - 42*d*e*x + 42
*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x +
6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*a*b^3*g - 1/4*(4*e*n*(2*d^2*
log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c)^3 - (e*n*((2*d^2
*log(e*x + d)^4 + 12*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 42*d^2*log(e*x + d)^2
 - 90*d*e*x + 90*d^2*log(e*x + d))*n^2/e^4 - 2*(4*d^2*log(e*x + d)^3 + 3*e^
2*x^2 + 18*d^2*log(e*x + d)^2 - 42*d*e*x + 42*d^2*log(e*x + d))*n*log((e*x
+ d)^n*c)/e^4) + 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*
x + d))*n*log((e*x + d)^n*c)^2/e^3)*e*n)*b^4*g + a^4*f*x
```

Fricas [B] time = 2.55082, size = 3646, normalized size = 10.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="fricas")
```

```
[Out] 1/4*(2*(b^4*e^2*g*n^4*x^2 + 2*b^4*e^2*f*n^4*x + (2*b^4*d*e*f - b^4*d^2*g)*n
^4)*log(e*x + d)^4 + 2*(b^4*e^2*g*x^2 + 2*b^4*e^2*f*x)*log(c)^4 - 4*((4*b^4
*d*e*f - 3*b^4*d^2*g)*n^4 - 2*(2*a*b^3*d*e*f - a*b^3*d^2*g)*n^3 + (b^4*e^2*
g*n^4 - 2*a*b^3*e^2*g*n^3)*x^2 - 2*(2*a*b^3*e^2*f*n^3 - (2*b^4*e^2*f - b^4*
d*e*g)*n^4)*x - 2*(b^4*e^2*g*n^3*x^2 + 2*b^4*e^2*f*n^3*x + (2*b^4*d*e*f - b
^4*d^2*g)*n^3)*log(c))*log(e*x + d)^3 - 4*((b^4*e^2*g*n - 2*a*b^3*e^2*g)*x^
2 - 2*(2*a*b^3*e^2*f - (2*b^4*e^2*f - b^4*d*e*g)*n)*x)*log(c)^3 + (3*b^4*e^
2*g*n^4 - 6*a*b^3*e^2*g*n^3 + 6*a^2*b^2*e^2*g*n^2 - 4*a^3*b*e^2*g*n + 2*a^4
*e^2*g)*x^2 + 6*((8*b^4*d*e*f - 7*b^4*d^2*g)*n^4 - 2*(4*a*b^3*d*e*f - 3*a*b
^3*d^2*g)*n^3 + 2*(2*a^2*b^2*d*e*f - a^2*b^2*d^2*g)*n^2 + (b^4*e^2*g*n^4 -
2*a*b^3*e^2*g*n^3 + 2*a^2*b^2*e^2*g*n^2)*x^2 + 2*(b^4*e^2*g*n^2*x^2 + 2*b^4
*e^2*f*n^2*x + (2*b^4*d*e*f - b^4*d^2*g)*n^2)*log(c)^2 + 2*(2*a^2*b^2*e^2*f
*n^2 + (4*b^4*e^2*f - 3*b^4*d*e*g)*n^4 - 2*(2*a*b^3*e^2*f - a*b^3*d*e*g)*n^
3)*x - 2*((4*b^4*d*e*f - 3*b^4*d^2*g)*n^3 - 2*(2*a*b^3*d*e*f - a*b^3*d^2*g)
*n^2 + (b^4*e^2*g*n^3 - 2*a*b^3*e^2*g*n^2)*x^2 - 2*(2*a*b^3*e^2*f*n^2 - (2*
b^4*e^2*f - b^4*d*e*g)*n^3)*x)*log(c))*log(e*x + d)^2 + 6*((b^4*e^2*g*n^2 -
 2*a*b^3*e^2*g*n + 2*a^2*b^2*e^2*g)*x^2 + 2*(2*a^2*b^2*e^2*f + (4*b^4*e^2*f
 - 3*b^4*d*e*g)*n^2 - 2*(2*a*b^3*e^2*f - a*b^3*d*e*g)*n)*x)*log(c)^2 + 2*(2
*a^4*e^2*f + 3*(16*b^4*e^2*f - 15*b^4*d*e*g)*n^4 - 6*(8*a*b^3*e^2*f - 7*a*b
^3*d*e*g)*n^3 + 6*(4*a^2*b^2*e^2*f - 3*a^2*b^2*d*e*g)*n^2 - 4*(2*a^3*b*e^2*
f - a^3*b*d*e*g)*n)*x - 2*(3*(16*b^4*d*e*f - 15*b^4*d^2*g)*n^4 - 6*(8*a*b^3
*d*e*f - 7*a*b^3*d^2*g)*n^3 - 4*(b^4*e^2*g*n*x^2 + 2*b^4*e^2*f*n*x + (2*b^4
*d*e*f - b^4*d^2*g)*n)*log(c)^3 + 6*(4*a^2*b^2*d*e*f - 3*a^2*b^2*d^2*g)*n^2
 + (3*b^4*e^2*g*n^4 - 6*a*b^3*e^2*g*n^3 + 6*a^2*b^2*e^2*g*n^2 - 4*a^3*b*e^2
*g*n)*x^2 + 6*((4*b^4*d*e*f - 3*b^4*d^2*g)*n^2 + (b^4*e^2*g*n^2 - 2*a*b^3*e
^2*g*n)*x^2 - 2*(2*a*b^3*d*e*f - a*b^3*d^2*g)*n - 2*(2*a*b^3*e^2*f*n - (2*b
^4*e^2*f - b^4*d*e*g)*n^2)*x)*log(c)^2 - 4*(2*a^3*b*d*e*f - a^3*b*d^2*g)*n
- 2*(4*a^3*b*e^2*f*n - 3*(8*b^4*e^2*f - 7*b^4*d*e*g)*n^4 + 6*(4*a*b^3*e^2*f
 - 3*a*b^3*d*e*g)*n^3 - 6*(2*a^2*b^2*e^2*f - a^2*b^2*d*e*g)*n^2)*x - 6*((8*
b^4*d*e*f - 7*b^4*d^2*g)*n^3 - 2*(4*a*b^3*d*e*f - 3*a*b^3*d^2*g)*n^2 + (b^4
*e^2*g*n^3 - 2*a*b^3*e^2*g*n^2 + 2*a^2*b^2*e^2*g*n)*x^2 + 2*(2*a^2*b^2*d*e*
f - a^2*b^2*d^2*g)*n + 2*(2*a^2*b^2*e^2*f*n + (4*b^4*e^2*f - 3*b^4*d*e*g)*n
^3 - 2*(2*a*b^3*e^2*f - a*b^3*d*e*g)*n^2)*x)*log(c))*log(e*x + d) - 2*((3*b
^4*e^2*g*n^3 - 6*a*b^3*e^2*g*n^2 + 6*a^2*b^2*e^2*g*n - 4*a^3*b*e^2*g)*x^2 -
 2*(4*a^3*b*e^2*f - 3*(8*b^4*e^2*f - 7*b^4*d*e*g)*n^3 + 6*(4*a*b^3*e^2*f -
3*a*b^3*d*e*g)*n^2 - 6*(2*a^2*b^2*e^2*f - a^2*b^2*d*e*g)*n)*x)*log(c))/e^2
```

Sympy [A] time = 19.2123, size = 2885, normalized size = 8.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**4,x)
```

```
[Out] Piecewise((a**4*f*x + a**4*g*x**2/2 - 2*a**3*b*d**2*g*n*log(d + e*x)/e**2 +
 4*a**3*b*d*f*n*log(d + e*x)/e + 2*a**3*b*d*g*n*x/e + 4*a**3*b*f*n*x*log(d
+ e*x) - 4*a**3*b*f*n*x + 4*a**3*b*f*x*log(c) + 2*a**3*b*g*n*x**2*log(d + e
*x) - a**3*b*g*n*x**2 + 2*a**3*b*g*x**2*log(c) - 3*a**2*b**2*d**2*g*n**2*lo
g(d + e*x)**2/e**2 + 9*a**2*b**2*d**2*g*n**2*log(d + e*x)/e**2 - 6*a**2*b**
2*d**2*g*n*log(c)*log(d + e*x)/e**2 + 6*a**2*b**2*d*f*n**2*log(d + e*x)**2/
e - 12*a**2*b**2*d*f*n**2*log(d + e*x)/e + 12*a**2*b**2*d*f*n*log(c)*log(d
+ e*x)/e + 6*a**2*b**2*d*g*n**2*x*log(d + e*x)/e - 9*a**2*b**2*d*g*n**2*x/e
```

```
 + 6*a**2*b**2*d*g*n*x*log(c)/e + 6*a**2*b**2*f*n**2*x*log(d + e*x)**2 - 12
*a**2*b**2*f*n**2*x*log(d + e*x) + 12*a**2*b**2*f*n**2*x + 12*a**2*b**2*f*n
*x*log(c)*log(d + e*x) - 12*a**2*b**2*f*n*x*log(c) + 6*a**2*b**2*f*x*log(c)
**2 + 3*a**2*b**2*g*n**2*x**2*log(d + e*x)**2 - 3*a**2*b**2*g*n**2*x**2*log
(d + e*x) + 3*a**2*b**2*g*n**2*x**2/2 + 6*a**2*b**2*g*n*x**2*log(c)*log(d +
 e*x) - 3*a**2*b**2*g*n*x**2*log(c) + 3*a**2*b**2*g*x**2*log(c)**2 - 2*a*b*
*3*d**2*g*n**3*log(d + e*x)**3/e**2 + 9*a*b**3*d**2*g*n**3*log(d + e*x)**2/
e**2 - 21*a*b**3*d**2*g*n**3*log(d + e*x)/e**2 - 6*a*b**3*d**2*g*n**2*log(c
)*log(d + e*x)**2/e**2 + 18*a*b**3*d**2*g*n**2*log(c)*log(d + e*x)/e**2 - 6
*a*b**3*d**2*g*n*log(c)**2*log(d + e*x)/e**2 + 4*a*b**3*d*f*n**3*log(d + e*
x)**3/e - 12*a*b**3*d*f*n**3*log(d + e*x)**2/e + 24*a*b**3*d*f*n**3*log(d +
 e*x)/e + 12*a*b**3*d*f*n**2*log(c)*log(d + e*x)**2/e - 24*a*b**3*d*f*n**2*
log(c)*log(d + e*x)/e + 12*a*b**3*d*f*n*log(c)**2*log(d + e*x)/e + 6*a*b**3
*d*g*n**3*x*log(d + e*x)**2/e - 18*a*b**3*d*g*n**3*x*log(d + e*x)/e + 21*a*
b**3*d*g*n**3*x/e + 12*a*b**3*d*g*n**2*x*log(c)*log(d + e*x)/e - 18*a*b**3*
d*g*n**2*x*log(c)/e + 6*a*b**3*d*g*n*x*log(c)**2/e + 4*a*b**3*f*n**3*x*log(
d + e*x)**3 - 12*a*b**3*f*n**3*x*log(d + e*x)**2 + 24*a*b**3*f*n**3*x*log(d
 + e*x) - 24*a*b**3*f*n**3*x + 12*a*b**3*f*n**2*x*log(c)*log(d + e*x)**2 -
24*a*b**3*f*n**2*x*log(c)*log(d + e*x) + 24*a*b**3*f*n**2*x*log(c) + 12*a*b
**3*f*n*x*log(c)**2*log(d + e*x) - 12*a*b**3*f*n*x*log(c)**2 + 4*a*b**3*f*x
*log(c)**3 + 2*a*b**3*g*n**3*x**2*log(d + e*x)**3 - 3*a*b**3*g*n**3*x**2*lo
g(d + e*x)**2 + 3*a*b**3*g*n**3*x**2*log(d + e*x) - 3*a*b**3*g*n**3*x**2/2
+ 6*a*b**3*g*n**2*x**2*log(c)*log(d + e*x)**2 - 6*a*b**3*g*n**2*x**2*log(c)
*log(d + e*x) + 3*a*b**3*g*n**2*x**2*log(c) + 6*a*b**3*g*n*x**2*log(c)**2*l
og(d + e*x) - 3*a*b**3*g*n*x**2*log(c)**2 + 2*a*b**3*g*x**2*log(c)**3 - b**
4*d**2*g*n**4*log(d + e*x)**4/(2*e**2) + 3*b**4*d**2*g*n**4*log(d + e*x)**3
/e**2 - 21*b**4*d**2*g*n**4*log(d + e*x)**2/(2*e**2) + 45*b**4*d**2*g*n**4*
log(d + e*x)/(2*e**2) - 2*b**4*d**2*g*n**3*log(c)*log(d + e*x)**3/e**2 + 9*
b**4*d**2*g*n**3*log(c)*log(d + e*x)**2/e**2 - 21*b**4*d**2*g*n**3*log(c)*l
og(d + e*x)/e**2 - 3*b**4*d**2*g*n**2*log(c)**2*log(d + e*x)**2/e**2 + 9*b*
*4*d**2*g*n**2*log(c)**2*log(d + e*x)/e**2 - 2*b**4*d**2*g*n*log(c)**3*log(
d + e*x)/e**2 + b**4*d*f*n**4*log(d + e*x)**4/e - 4*b**4*d*f*n**4*log(d + e
*x)**3/e + 12*b**4*d*f*n**4*log(d + e*x)**2/e - 24*b**4*d*f*n**4*log(d + e*
x)/e + 4*b**4*d*f*n**3*log(c)*log(d + e*x)**3/e - 12*b**4*d*f*n**3*log(c)*l
og(d + e*x)**2/e + 24*b**4*d*f*n**3*log(c)*log(d + e*x)/e + 6*b**4*d*f*n**2
*log(c)**2*log(d + e*x)**2/e - 12*b**4*d*f*n**2*log(c)**2*log(d + e*x)/e +
4*b**4*d*f*n*log(c)**3*log(d + e*x)/e + 2*b**4*d*g*n**4*x*log(d + e*x)**3/e
 - 9*b**4*d*g*n**4*x*log(d + e*x)**2/e + 21*b**4*d*g*n**4*x*log(d + e*x)/e
- 45*b**4*d*g*n**4*x/(2*e) + 6*b**4*d*g*n**3*x*log(c)*log(d + e*x)**2/e - 1
8*b**4*d*g*n**3*x*log(c)*log(d + e*x)/e + 21*b**4*d*g*n**3*x*log(c)/e + 6*b
**4*d*g*n**2*x*log(c)**2*log(d + e*x)/e - 9*b**4*d*g*n**2*x*log(c)**2/e + 2
*b**4*d*g*n*x*log(c)**3/e + b**4*f*n**4*x*log(d + e*x)**4 - 4*b**4*f*n**4*x
*log(d + e*x)**3 + 12*b**4*f*n**4*x*log(d + e*x)**2 - 24*b**4*f*n**4*x*log(
d + e*x) + 24*b**4*f*n**4*x + 4*b**4*f*n**3*x*log(c)*log(d + e*x)**3 - 12*b
**4*f*n**3*x*log(c)*log(d + e*x)**2 + 24*b**4*f*n**3*x*log(c)*log(d + e*x)
- 24*b**4*f*n**3*x*log(c) + 6*b**4*f*n**2*x*log(c)**2*log(d + e*x)**2 - 12*
b**4*f*n**2*x*log(c)**2*log(d + e*x) + 12*b**4*f*n**2*x*log(c)**2 + 4*b**4*
f*n*x*log(c)**3*log(d + e*x) - 4*b**4*f*n*x*log(c)**3 + b**4*f*x*log(c)**4
+ b**4*g*n**4*x**2*log(d + e*x)**4/2 - b**4*g*n**4*x**2*log(d + e*x)**3 + 3
*b**4*g*n**4*x**2*log(d + e*x)**2/2 - 3*b**4*g*n**4*x**2*log(d + e*x)/2 + 3
*b**4*g*n**4*x**2/4 + 2*b**4*g*n**3*x**2*log(c)*log(d + e*x)**3 - 3*b**4*g*
n**3*x**2*log(c)*log(d + e*x)**2 + 3*b**4*g*n**3*x**2*log(c)*log(d + e*x) -
 3*b**4*g*n**3*x**2*log(c)/2 + 3*b**4*g*n**2*x**2*log(c)**2*log(d + e*x)**2
 - 3*b**4*g*n**2*x**2*log(c)**2*log(d + e*x) + 3*b**4*g*n**2*x**2*log(c)**2
/2 + 2*b**4*g*n*x**2*log(c)**3*log(d + e*x) - b**4*g*n*x**2*log(c)**3 + b**
4*g*x**2*log(c)**4/2, Ne(e, 0)), ((a + b*log(c*d**n))**4*(f*x + g*x**2/2),
True))
```

Giac [B] time = 1.31625, size = 3440, normalized size = 10.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^4,x, algorithm="giac")
```

```
[Out] 1/2*(x*e + d)^2*b^4*g*n^4*e^(-2)*log(x*e + d)^4 - (x*e + d)*b^4*d*g*n^4*e^(
-2)*log(x*e + d)^4 - (x*e + d)^2*b^4*g*n^4*e^(-2)*log(x*e + d)^3 + 4*(x*e +
 d)*b^4*d*g*n^4*e^(-2)*log(x*e + d)^3 + (x*e + d)*b^4*f*n^4*e^(-1)*log(x*e
+ d)^4 + 2*(x*e + d)^2*b^4*g*n^3*e^(-2)*log(x*e + d)^3*log(c) - 4*(x*e + d)
*b^4*d*g*n^3*e^(-2)*log(x*e + d)^3*log(c) + 3/2*(x*e + d)^2*b^4*g*n^4*e^(-2
)*log(x*e + d)^2 - 12*(x*e + d)*b^4*d*g*n^4*e^(-2)*log(x*e + d)^2 - 4*(x*e
+ d)*b^4*f*n^4*e^(-1)*log(x*e + d)^3 + 2*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log
(x*e + d)^3 - 4*(x*e + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d)^3 - 3*(x*e + d)
^2*b^4*g*n^3*e^(-2)*log(x*e + d)^2*log(c) + 12*(x*e + d)*b^4*d*g*n^3*e^(-2)
*log(x*e + d)^2*log(c) + 4*(x*e + d)*b^4*f*n^3*e^(-1)*log(x*e + d)^3*log(c)
 + 3*(x*e + d)^2*b^4*g*n^2*e^(-2)*log(x*e + d)^2*log(c)^2 - 6*(x*e + d)*b^4
*d*g*n^2*e^(-2)*log(x*e + d)^2*log(c)^2 - 3/2*(x*e + d)^2*b^4*g*n^4*e^(-2)*
log(x*e + d) + 24*(x*e + d)*b^4*d*g*n^4*e^(-2)*log(x*e + d) + 12*(x*e + d)*
b^4*f*n^4*e^(-1)*log(x*e + d)^2 - 3*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log(x*e
+ d)^2 + 12*(x*e + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d)^2 + 4*(x*e + d)*a*b
^3*f*n^3*e^(-1)*log(x*e + d)^3 + 3*(x*e + d)^2*b^4*g*n^3*e^(-2)*log(x*e + d
)*log(c) - 24*(x*e + d)*b^4*d*g*n^3*e^(-2)*log(x*e + d)*log(c) - 12*(x*e +
d)*b^4*f*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)^2*a*b^3*g*n^2*e^(-2
)*log(x*e + d)^2*log(c) - 12*(x*e + d)*a*b^3*d*g*n^2*e^(-2)*log(x*e + d)^2*
log(c) - 3*(x*e + d)^2*b^4*g*n^2*e^(-2)*log(x*e + d)*log(c)^2 + 12*(x*e + d
)*b^4*d*g*n^2*e^(-2)*log(x*e + d)*log(c)^2 + 6*(x*e + d)*b^4*f*n^2*e^(-1)*l
og(x*e + d)^2*log(c)^2 + 2*(x*e + d)^2*b^4*g*n*e^(-2)*log(x*e + d)*log(c)^3
 - 4*(x*e + d)*b^4*d*g*n*e^(-2)*log(x*e + d)*log(c)^3 + 3/4*(x*e + d)^2*b^4
*g*n^4*e^(-2) - 24*(x*e + d)*b^4*d*g*n^4*e^(-2) - 24*(x*e + d)*b^4*f*n^4*e^
(-1)*log(x*e + d) + 3*(x*e + d)^2*a*b^3*g*n^3*e^(-2)*log(x*e + d) - 24*(x*e
 + d)*a*b^3*d*g*n^3*e^(-2)*log(x*e + d) - 12*(x*e + d)*a*b^3*f*n^3*e^(-1)*l
og(x*e + d)^2 + 3*(x*e + d)^2*a^2*b^2*g*n^2*e^(-2)*log(x*e + d)^2 - 6*(x*e
+ d)*a^2*b^2*d*g*n^2*e^(-2)*log(x*e + d)^2 - 3/2*(x*e + d)^2*b^4*g*n^3*e^(-
2)*log(c) + 24*(x*e + d)*b^4*d*g*n^3*e^(-2)*log(c) + 24*(x*e + d)*b^4*f*n^3
*e^(-1)*log(x*e + d)*log(c) - 6*(x*e + d)^2*a*b^3*g*n^2*e^(-2)*log(x*e + d)
*log(c) + 24*(x*e + d)*a*b^3*d*g*n^2*e^(-2)*log(x*e + d)*log(c) + 12*(x*e +
 d)*a*b^3*f*n^2*e^(-1)*log(x*e + d)^2*log(c) + 3/2*(x*e + d)^2*b^4*g*n^2*e^
(-2)*log(c)^2 - 12*(x*e + d)*b^4*d*g*n^2*e^(-2)*log(c)^2 - 12*(x*e + d)*b^4
*f*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 6*(x*e + d)^2*a*b^3*g*n*e^(-2)*log(x*
e + d)*log(c)^2 - 12*(x*e + d)*a*b^3*d*g*n*e^(-2)*log(x*e + d)*log(c)^2 - (
x*e + d)^2*b^4*g*n*e^(-2)*log(c)^3 + 4*(x*e + d)*b^4*d*g*n*e^(-2)*log(c)^3
+ 4*(x*e + d)*b^4*f*n*e^(-1)*log(x*e + d)*log(c)^3 + 1/2*(x*e + d)^2*b^4*g*
e^(-2)*log(c)^4 - (x*e + d)*b^4*d*g*e^(-2)*log(c)^4 + 24*(x*e + d)*b^4*f*n^
4*e^(-1) - 3/2*(x*e + d)^2*a*b^3*g*n^3*e^(-2) + 24*(x*e + d)*a*b^3*d*g*n^3*
e^(-2) + 24*(x*e + d)*a*b^3*f*n^3*e^(-1)*log(x*e + d) - 3*(x*e + d)^2*a^2*b
^2*g*n^2*e^(-2)*log(x*e + d) + 12*(x*e + d)*a^2*b^2*d*g*n^2*e^(-2)*log(x*e
+ d) + 6*(x*e + d)*a^2*b^2*f*n^2*e^(-1)*log(x*e + d)^2 - 24*(x*e + d)*b^4*f
*n^3*e^(-1)*log(c) + 3*(x*e + d)^2*a*b^3*g*n^2*e^(-2)*log(c) - 24*(x*e + d)
*a*b^3*d*g*n^2*e^(-2)*log(c) - 24*(x*e + d)*a*b^3*f*n^2*e^(-1)*log(x*e + d)
*log(c) + 6*(x*e + d)^2*a^2*b^2*g*n*e^(-2)*log(x*e + d)*log(c) - 12*(x*e +
d)*a^2*b^2*d*g*n*e^(-2)*log(x*e + d)*log(c) + 12*(x*e + d)*b^4*f*n^2*e^(-1)
*log(c)^2 - 3*(x*e + d)^2*a*b^3*g*n*e^(-2)*log(c)^2 + 12*(x*e + d)*a*b^3*d*
g*n*e^(-2)*log(c)^2 + 12*(x*e + d)*a*b^3*f*n*e^(-1)*log(x*e + d)*log(c)^2 -
 4*(x*e + d)*b^4*f*n*e^(-1)*log(c)^3 + 2*(x*e + d)^2*a*b^3*g*e^(-2)*log(c)^
3 - 4*(x*e + d)*a*b^3*d*g*e^(-2)*log(c)^3 + (x*e + d)*b^4*f*e^(-1)*log(c)^4
 - 24*(x*e + d)*a*b^3*f*n^3*e^(-1) + 3/2*(x*e + d)^2*a^2*b^2*g*n^2*e^(-2) -
```

```
 12*(x*e + d)*a^2*b^2*d*g*n^2*e^(-2) - 12*(x*e + d)*a^2*b^2*f*n^2*e^(-1)*lo
g(x*e + d) + 2*(x*e + d)^2*a^3*b*g*n*e^(-2)*log(x*e + d) - 4*(x*e + d)*a^3*
b*d*g*n*e^(-2)*log(x*e + d) + 24*(x*e + d)*a*b^3*f*n^2*e^(-1)*log(c) - 3*(x
*e + d)^2*a^2*b^2*g*n*e^(-2)*log(c) + 12*(x*e + d)*a^2*b^2*d*g*n*e^(-2)*log
(c) + 12*(x*e + d)*a^2*b^2*f*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*
b^3*f*n*e^(-1)*log(c)^2 + 3*(x*e + d)^2*a^2*b^2*g*e^(-2)*log(c)^2 - 6*(x*e
+ d)*a^2*b^2*d*g*e^(-2)*log(c)^2 + 4*(x*e + d)*a*b^3*f*e^(-1)*log(c)^3 + 12
*(x*e + d)*a^2*b^2*f*n^2*e^(-1) - (x*e + d)^2*a^3*b*g*n*e^(-2) + 4*(x*e + d
)*a^3*b*d*g*n*e^(-2) + 4*(x*e + d)*a^3*b*f*n*e^(-1)*log(x*e + d) - 12*(x*e
+ d)*a^2*b^2*f*n*e^(-1)*log(c) + 2*(x*e + d)^2*a^3*b*g*e^(-2)*log(c) - 4*(x
*e + d)*a^3*b*d*g*e^(-2)*log(c) + 6*(x*e + d)*a^2*b^2*f*e^(-1)*log(c)^2 - 4
*(x*e + d)*a^3*b*f*n*e^(-1) + 1/2*(x*e + d)^2*a^4*g*e^(-2) - (x*e + d)*a^4*
d*g*e^(-2) + 4*(x*e + d)*a^3*b*f*e^(-1)*log(c) + (x*e + d)*a^4*f*e^(-1)
```

3.61 $\int (a+b\log(c(d+ex)^n))^4\,dx$

Optimal. Leaf size=131

$$\frac{12b^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-24ab^3n^3x-\frac{4bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}$$

```
[Out] -24*a*b^3*n^3*x + 24*b^4*n^4*x - (24*b^4*n^3*(d + e*x)*Log[c*(d + e*x)^n])/
e + (12*b^2*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e - (4*b*n*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^3)/e + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4
)/e
```

Rubi [A] time = 0.0710391, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2296, 2295}

$$\frac{12b^2n^2(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{e}-24ab^3n^3x-\frac{4bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{e}+\frac{(d+ex)\left(a+b\log\left(c(d+\right.\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4,x]
```


```
[Out] -24*a*b^3*n^3*x + 24*b^4*n^4*x - (24*b^4*n^3*(d + e*x)*Log[c*(d + e*x)^n])/
e + (12*b^2*n^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e - (4*b*n*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^3)/e + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4
)/e
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^4\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^4\,dx,x,d+ex\right)}{e}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{e} - \frac{(4bn)\,\text{Subst}\left(\int (a+b\log(cx^n))^3\,dx,x,d+ex\right)}{e}$$

$$= -\frac{4bn(d+ex)(a+b\log(c(d+ex)^n))^3}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{e} + \frac{(12b^2n^2)\,\text{Su}}{}$$

$$= \frac{12b^2n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{4bn(d+ex)(a+b\log(c(d+ex)^n))^3}{e} + \frac{(d+ex}{}$$

$$= -24ab^3n^3x + \frac{12b^2n^2(d+ex)(a+b\log(c(d+ex)^n))^2}{e} - \frac{4bn(d+ex)(a+b\log(c(d+ex)}{e}$$

$$= -24ab^3n^3x + 24b^4n^4x - \frac{24b^4n^3(d+ex)\log(c(d+ex)^n)}{e} + \frac{12b^2n^2(d+ex)(a+b\log(c(d}{e}$$

Mathematica [A] time = 0.0304475, size = 112, normalized size = 0.85

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^4 - 4bn\left((d+ex)(a+b\log(c(d+ex)^n))^3 - 3bn\left((d+ex)(a+b\log(c(d+ex)^n))^2 - 2bn(e\right.\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4 - 4*b*n*((d + e*x)*(a + b*Log[c*(d
+ e*x)^n])^3 - 3*b*n*((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2 - 2*b*n*(e*(a
- b*n)*x + b*(d + e*x)*Log[c*(d + e*x)^n]))))/e
```

Maple [C] time = 0.452, size = 15871, normalized size = 121.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4,x)
```

```
[Out] result too large to display
```

Maxima [B] time = 1.35097, size = 675, normalized size = 5.15

$$b^4x\log\left((ex+d)^nc\right)^4 + 4\,ab^3x\log\left((ex+d)^nc\right)^3 - 4\,a^3ben\left(\frac{x}{e} - \frac{d\log(ex+d)}{e^2}\right) + 6\,a^2b^2x\log\left((ex+d)^nc\right)^2 + 4\,a^3bx\log\left((e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log((e*x + d)^n*c)^4 + 4*a*b^3*x*log((e*x + d)^n*c)^3 - 4*a^3*b*e*n*(
x/e - d*log(e*x + d)/e^2) + 6*a^2*b^2*x*log((e*x + d)^n*c)^2 + 4*a^3*b*x*lo
g((e*x + d)^n*c) - 6*(2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) +
```

```
(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*a^2*b^2 - 4*(3*e*n*(x
/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*
d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2
- 2*e*x + 2*d*log(e*x + d))*n*log((e*x + d)^n*c)/e^2))*a*b^3 - (4*e*n*(x/e
- d*log(e*x + d)/e^2)*log((e*x + d)^n*c)^3 + (e*n*((d*log(e*x + d)^4 + 4*d*
log(e*x + d)^3 + 12*d*log(e*x + d)^2 - 24*e*x + 24*d*log(e*x + d))*n^2/e^3
- 4*(d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e*x + d))*n*lo
g((e*x + d)^n*c)/e^3) + 6*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*l
og((e*x + d)^n*c)^2/e^2)*e*n)*b^4 + a^4*x
```

Fricas [B] time = 2.10305, size = 1312, normalized size = 10.02

$$\frac{b^4ex\log(c)^4 + \left(b^4en^4x + b^4dn^4\right)\log(ex+d)^4 - 4\left(b^4en - ab^3e\right)x\log(c)^3 - 4\left(b^4dn^4 - ab^3dn^3 + \left(b^4en^4 - ab^3en^3\right)x - \left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="fricas")
```

```
[Out] (b^4*e*x*log(c)^4 + (b^4*e*n^4*x + b^4*d*n^4)*log(e*x + d)^4 - 4*(b^4*e*n -
 a*b^3*e)*x*log(c)^3 - 4*(b^4*d*n^4 - a*b^3*d*n^3 + (b^4*e*n^4 - a*b^3*e*n^
3)*x - (b^4*e*n^3*x + b^4*d*n^3)*log(c))*log(e*x + d)^3 + 6*(2*b^4*e*n^2 -
2*a*b^3*e*n + a^2*b^2*e)*x*log(c)^2 + 6*(2*b^4*d*n^4 - 2*a*b^3*d*n^3 + a^2*
b^2*d*n^2 + (b^4*e*n^2*x + b^4*d*n^2)*log(c)^2 + (2*b^4*e*n^4 - 2*a*b^3*e*n
^3 + a^2*b^2*e*n^2)*x - 2*(b^4*d*n^3 - a*b^3*d*n^2 + (b^4*e*n^3 - a*b^3*e*n
^2)*x)*log(c))*log(e*x + d)^2 - 4*(6*b^4*e*n^3 - 6*a*b^3*e*n^2 + 3*a^2*b^2*
e*n - a^3*b*e)*x*log(c) + (24*b^4*e*n^4 - 24*a*b^3*e*n^3 + 12*a^2*b^2*e*n^2
 - 4*a^3*b*e*n + a^4*e)*x - 4*(6*b^4*d*n^4 - 6*a*b^3*d*n^3 + 3*a^2*b^2*d*n^
2 - a^3*b*d*n - (b^4*e*n*x + b^4*d*n)*log(c)^3 + 3*(b^4*d*n^2 - a*b^3*d*n +
 (b^4*e*n^2 - a*b^3*e*n)*x)*log(c)^2 + (6*b^4*e*n^4 - 6*a*b^3*e*n^3 + 3*a^2
*b^2*e*n^2 - a^3*b*e*n)*x - 3*(2*b^4*d*n^3 - 2*a*b^3*d*n^2 + a^2*b^2*d*n +
(2*b^4*e*n^3 - 2*a*b^3*e*n^2 + a^2*b^2*e*n)*x)*log(c))*log(e*x + d))/e
```

Sympy [A] time = 6.32086, size = 1059, normalized size = 8.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*d*n*log(d + e*x)/e + 4*a**3*b*n*x*log(d + e*x)
 - 4*a**3*b*n*x + 4*a**3*b*x*log(c) + 6*a**2*b**2*d*n**2*log(d + e*x)**2/e
- 12*a**2*b**2*d*n**2*log(d + e*x)/e + 12*a**2*b**2*d*n*log(c)*log(d + e*x)
/e + 6*a**2*b**2*n**2*x*log(d + e*x)**2 - 12*a**2*b**2*n**2*x*log(d + e*x)
+ 12*a**2*b**2*n**2*x + 12*a**2*b**2*n*x*log(c)*log(d + e*x) - 12*a**2*b**2
*n*x*log(c) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*d*n**3*log(d + e*x)**3/e -
 12*a*b**3*d*n**3*log(d + e*x)**2/e + 24*a*b**3*d*n**3*log(d + e*x)/e + 12*
a*b**3*d*n**2*log(c)*log(d + e*x)**2/e - 24*a*b**3*d*n**2*log(c)*log(d + e*
x)/e + 12*a*b**3*d*n*log(c)**2*log(d + e*x)/e + 4*a*b**3*n**3*x*log(d + e*x
)**3 - 12*a*b**3*n**3*x*log(d + e*x)**2 + 24*a*b**3*n**3*x*log(d + e*x) - 2
4*a*b**3*n**3*x + 12*a*b**3*n**2*x*log(c)*log(d + e*x)**2 - 24*a*b**3*n**2*
x*log(c)*log(d + e*x) + 24*a*b**3*n**2*x*log(c) + 12*a*b**3*n*x*log(c)**2*l
og(d + e*x) - 12*a*b**3*n*x*log(c)**2 + 4*a*b**3*x*log(c)**3 + b**4*d*n**4*
```

```
log(d + e*x)**4/e - 4*b**4*d*n**4*log(d + e*x)**3/e + 12*b**4*d*n**4*log(d
+ e*x)**2/e - 24*b**4*d*n**4*log(d + e*x)/e + 4*b**4*d*n**3*log(c)*log(d +
e*x)**3/e - 12*b**4*d*n**3*log(c)*log(d + e*x)**2/e + 24*b**4*d*n**3*log(c)
*log(d + e*x)/e + 6*b**4*d*n**2*log(c)**2*log(d + e*x)**2/e - 12*b**4*d*n**
2*log(c)**2*log(d + e*x)/e + 4*b**4*d*n*log(c)**3*log(d + e*x)/e + b**4*n**
4*x*log(d + e*x)**4 - 4*b**4*n**4*x*log(d + e*x)**3 + 12*b**4*n**4*x*log(d
+ e*x)**2 - 24*b**4*n**4*x*log(d + e*x) + 24*b**4*n**4*x + 4*b**4*n**3*x*lo
g(c)*log(d + e*x)**3 - 12*b**4*n**3*x*log(c)*log(d + e*x)**2 + 24*b**4*n**3
*x*log(c)*log(d + e*x) - 24*b**4*n**3*x*log(c) + 6*b**4*n**2*x*log(c)**2*lo
g(d + e*x)**2 - 12*b**4*n**2*x*log(c)**2*log(d + e*x) + 12*b**4*n**2*x*log(
c)**2 + 4*b**4*n*x*log(c)**3*log(d + e*x) - 4*b**4*n*x*log(c)**3 + b**4*x*l
og(c)**4, Ne(e, 0)), (x*(a + b*log(c*d**n))**4, True))
```

Giac [B] time = 1.29681, size = 1050, normalized size = 8.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4,x, algorithm="giac")
```

```
[Out] (x*e + d)*b^4*n^4*e^(-1)*log(x*e + d)^4 - 4*(x*e + d)*b^4*n^4*e^(-1)*log(x*
e + d)^3 + 4*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^3*log(c) + 12*(x*e + d)*
b^4*n^4*e^(-1)*log(x*e + d)^2 + 4*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^3
 - 12*(x*e + d)*b^4*n^3*e^(-1)*log(x*e + d)^2*log(c) + 6*(x*e + d)*b^4*n^2*
e^(-1)*log(x*e + d)^2*log(c)^2 - 24*(x*e + d)*b^4*n^4*e^(-1)*log(x*e + d) -
 12*(x*e + d)*a*b^3*n^3*e^(-1)*log(x*e + d)^2 + 24*(x*e + d)*b^4*n^3*e^(-1)
*log(x*e + d)*log(c) + 12*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e + d)^2*log(c)
- 12*(x*e + d)*b^4*n^2*e^(-1)*log(x*e + d)*log(c)^2 + 4*(x*e + d)*b^4*n*e^(
-1)*log(x*e + d)*log(c)^3 + 24*(x*e + d)*b^4*n^4*e^(-1) + 24*(x*e + d)*a*b^
3*n^3*e^(-1)*log(x*e + d) + 6*(x*e + d)*a^2*b^2*n^2*e^(-1)*log(x*e + d)^2 -
 24*(x*e + d)*b^4*n^3*e^(-1)*log(c) - 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(x*e
 + d)*log(c) + 12*(x*e + d)*b^4*n^2*e^(-1)*log(c)^2 + 12*(x*e + d)*a*b^3*n*
e^(-1)*log(x*e + d)*log(c)^2 - 4*(x*e + d)*b^4*n*e^(-1)*log(c)^3 + (x*e + d
)*b^4*e^(-1)*log(c)^4 - 24*(x*e + d)*a*b^3*n^3*e^(-1) - 12*(x*e + d)*a^2*b^
2*n^2*e^(-1)*log(x*e + d) + 24*(x*e + d)*a*b^3*n^2*e^(-1)*log(c) + 12*(x*e
+ d)*a^2*b^2*n*e^(-1)*log(x*e + d)*log(c) - 12*(x*e + d)*a*b^3*n*e^(-1)*log
(c)^2 + 4*(x*e + d)*a*b^3*e^(-1)*log(c)^3 + 12*(x*e + d)*a^2*b^2*n^2*e^(-1)
 + 4*(x*e + d)*a^3*b*n*e^(-1)*log(x*e + d) - 12*(x*e + d)*a^2*b^2*n*e^(-1)*
log(c) + 6*(x*e + d)*a^2*b^2*e^(-1)*log(c)^2 - 4*(x*e + d)*a^3*b*n*e^(-1) +
 4*(x*e + d)*a^3*b*e^(-1)*log(c) + (x*e + d)*a^4*e^(-1)
```

3.62 $\int \frac{(a+b\log(c(d+ex)^n))^4}{f+gx} dx$

Optimal. Leaf size=205

$$\frac{24b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{12b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{4bn\text{Po}}{}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^4*Log[(e*(f + g*x))/(e*f - d*g)])/g + (4*b*n*(a
 + b*Log[c*(d + e*x)^n])^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (1
2*b^2*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*
g))])/g + (24*b^3*n^3*(a + b*Log[c*(d + e*x)^n])*PolyLog[4, -((g*(d + e*x))
/(e*f - d*g))])/g - (24*b^4*n^4*PolyLog[5, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rubi [A] time = 0.231313, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2396, 2433, 2374, 2383, 6589}

$$\frac{24b^3n^3\text{PolyLog}\left(4,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{12b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{4bn\text{Po}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x),x]
```


```
[Out] ((a + b*Log[c*(d + e*x)^n])^4*Log[(e*(f + g*x))/(e*f - d*g)])/g + (4*b*n*(a
 + b*Log[c*(d + e*x)^n])^3*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (1
2*b^2*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*
g))])/g + (24*b^3*n^3*(a + b*Log[c*(d + e*x)^n])*PolyLog[4, -((g*(d + e*x))
/(e*f - d*g))])/g - (24*b^4*n^4*PolyLog[5, -((g*(d + e*x))/(e*f - d*g))])/g
```


Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^4}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(4ben)\int\frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(4bn)\,\mathrm{Subst}\left(\int\frac{(a+b\log(cx^n))^3\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\,dx, x,\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{(12}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{12}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{12}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^4\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{4bn(a+b\log(c(d+ex)^n))^3\,\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{12}{}$$

Mathematica [B] time = 0.223017, size = 503, normalized size = 2.45

$$\frac{-4b^3n^3\left(6\mathrm{PolyLog}\left(4,\frac{g(d+ex)}{dg-ef}\right)+3\log^2(d+ex)\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-6\log(d+ex)\mathrm{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)+\log^3(d+ex)\,\mathrm{lo}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^4*Log[f + g*x] + 4*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]^2*Log[(e*(f + g*x))
/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) - 4*b^3*n^3*(-a + b*n*Log[d + e*
x] - b*Log[c*(d + e*x)^n])*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] +
```

```
3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]
*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e
*f) + d*g)]) + b^4*n^4*(Log[d + e*x]^4*Log[(e*(f + g*x))/(e*f - d*g)] + 4*L
og[d + e*x]^3*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 12*Log[d + e*x]^2*
PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 24*Log[d + e*x]*PolyLog[4, (g*(d
 + e*x))/(-(e*f) + d*g)] - 24*PolyLog[5, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

Maple [C] time = 1.559, size = 33189, normalized size = 161.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4/(g*x+f),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^4 \log\left(gx+f\right)}{g} + \int \frac{b^4 \log\left((ex+d)^n\right)^4 + b^4 \log\left(c\right)^4 + 4\,ab^3 \log\left(c\right)^3 + 6\,a^2b^2 \log\left(c\right)^2 + 4\,a^3b \log\left(c\right) + 4\left(b^4 \log\left(c\right) + a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^4*log(g*x + f)/g + integrate((b^4*log((e*x + d)^n)^4 + b^4*log(c)^4 + 4*a
*b^3*log(c)^3 + 6*a^2*b^2*log(c)^2 + 4*a^3*b*log(c) + 4*(b^4*log(c) + a*b^3
)*log((e*x + d)^n)^3 + 6*(b^4*log(c)^2 + 2*a*b^3*log(c) + a^2*b^2)*log((e*x
 + d)^n)^2 + 4*(b^4*log(c)^3 + 3*a*b^3*log(c)^2 + 3*a^2*b^2*log(c) + a^3*b)
*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4 \log\left((ex+d)^n c\right)^4 + 4\,ab^3 \log\left((ex+d)^n c\right)^3 + 6\,a^2b^2 \log\left((ex+d)^n c\right)^2 + 4\,a^3b \log\left((ex+d)^n c\right) + a^4}{gx+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^4*log((e*x + d)^n*c)^4 + 4*a*b^3*log((e*x + d)^n*c)^3 + 6*a^2*b
^2*log((e*x + d)^n*c)^2 + 4*a^3*b*log((e*x + d)^n*c) + a^4)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b \log\left(c \left(d + ex\right)^n\right)\right)^4}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**4/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^4}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^4/(g*x + f), x)
```

3.63 $\int \frac{(a+b\log(c(d+ex)^n))^4}{(f+gx)^2}\,dx$

Optimal. Leaf size=248

$$\frac{24b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)}-\frac{12b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g(ef-dg)}-\frac{24b^4}{}$$

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4)/((e*f - d*g)*(f + g*x)) - (4*b*e*n
*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g
)) - (12*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/
(e*f - d*g))])/(g*(e*f - d*g)) + (24*b^3*e*n^3*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)) - (24*b^4*e*n^4*Po
lyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g))
```

Rubi [A] time = 0.234689, antiderivative size = 248, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2397, 2396, 2433, 2374, 2383, 6589}

$$\frac{24b^3en^3\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g(ef-dg)}-\frac{12b^2en^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g(ef-dg)}-\frac{24b^4}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^4)/((e*f - d*g)*(f + g*x)) - (4*b*e*n
*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*(e*f - d*g
)) - (12*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/
(e*f - d*g))])/(g*(e*f - d*g)) + (24*b^3*e*n^3*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g)) - (24*b^4*e*n^4*Po
lyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*(e*f - d*g))
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^4}{(f+gx)^2}\,dx = \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{(4ben)\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx}{ef-dg}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} + \frac{(12b^2e^2 \cdots}{\cdots}$$

$$(12b^2en \cdots$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} + \cdots$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} - \frac{12b^2en^2 \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} - \frac{12b^2en^2 \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^4}{(ef-dg)(f+gx)} - \frac{4ben(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)} - \frac{12b^2en^2 \cdots}{\cdots}$$

Mathematica [B] time = 0.75349, size = 531, normalized size = 2.14

$$\frac{4b^3n^3\left(6e(f+gx)\text{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)-6e(f+gx)\log(d+ex)\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\log^2(d+ex)\left(g(d+ex)\log(d+ex\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^4/(f + g*x)^2,x]
```

```
[Out] (-((e*f - d*g)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^4) + 4*b*n*(a
- b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*(g*(d + e*x)*Log[d + e*x] - e*
(f + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) + 6*b^2*n^2*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*(g*(d + e*x)*Log[d + e*x] - 2*e*(f
 + g*x)*Log[(e*(f + g*x))/(e*f - d*g)]) - 2*e*(f + g*x)*PolyLog[2, (g*(d +
e*x))/(-(e*f) + d*g)]) + 4*b^3*n^3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])*(Log[d + e*x]^2*(g*(d + e*x)*Log[d + e*x] - 3*e*(f + g*x)*Log[(e*(f +
 g*x))/(e*f - d*g)]) - 6*e*(f + g*x)*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/
(-(e*f) + d*g)] + 6*e*(f + g*x)*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) +
 b^4*n^4*(g*(d + e*x)*Log[d + e*x]^4 - 4*e*(f + g*x)*Log[d + e*x]^3*Log[(e*
(f + g*x))/(e*f - d*g)] - 12*e*(f + g*x)*Log[d + e*x]^2*PolyLog[2, (g*(d +
e*x))/(-(e*f) + d*g)] + 24*e*(f + g*x)*Log[d + e*x]*PolyLog[3, (g*(d + e*x)
)/(-(e*f) + d*g)] - 24*e*(f + g*x)*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)]
))/(g*(e*f - d*g)*(f + g*x))
```

Maple [C] time = 1.556, size = 21740, normalized size = 87.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^4/(g*x+f)^2,x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$4\,a^3ben\left(\frac{\log\left(ex+d\right)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-\frac{b^4\log\left(\left(ex+d\right)^n\right)^4}{g^2x+fg}-\frac{4\,a^3b\log\left(\left(ex+d\right)^n c\right)}{g^2x+fg}-\frac{a^4}{g^2x+fg}+\int\frac{b^4dg\log\left(c\right)^4+4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 4*a^3*b*e*n*(log(e*x + d)/(e*f*g - d*g^2) - log(g*x + f)/(e*f*g - d*g^2)) -
 b^4*log((e*x + d)^n)^4/(g^2*x + f*g) - 4*a^3*b*log((e*x + d)^n*c)/(g^2*x +
 f*g) - a^4/(g^2*x + f*g) + integrate((b^4*d*g*log(c)^4 + 4*a*b^3*d*g*log(c
)^3 + 6*a^2*b^2*d*g*log(c)^2 + 4*(a*b^3*d*g + (e*f*n + d*g*log(c))*b^4 + (a
*b^3*e*g + (e*g*n + e*g*log(c))*b^4)*x)*log((e*x + d)^n)^3 + 6*(b^4*d*g*log
(c)^2 + 2*a*b^3*d*g*log(c) + a^2*b^2*d*g + (b^4*e*g*log(c)^2 + 2*a*b^3*e*g*
log(c) + a^2*b^2*e*g)*x)*log((e*x + d)^n)^2 + (b^4*e*g*log(c)^4 + 4*a*b^3*e
*g*log(c)^3 + 6*a^2*b^2*e*g*log(c)^2)*x + 4*(b^4*d*g*log(c)^3 + 3*a*b^3*d*g
*log(c)^2 + 3*a^2*b^2*d*g*log(c) + (b^4*e*g*log(c)^3 + 3*a*b^3*e*g*log(c)^2
 + 3*a^2*b^2*e*g*log(c))*x)*log((e*x + d)^n))/(e*g^3*x^3 + d*f^2*g + (2*e*f
*g^2 + d*g^3)*x^2 + (e*f^2*g + 2*d*f*g^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4\log\left(\left(ex+d\right)^n c\right)^4+4\,ab^3\log\left(\left(ex+d\right)^n c\right)^3+6\,a^2b^2\log\left(\left(ex+d\right)^n c\right)^2+4\,a^3b\log\left(\left(ex+d\right)^n c\right)+a^4}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*log((e*x + d)^n*c)^4 + 4*a*b^3*log((e*x + d)^n*c)^3 + 6*a^2*b
^2*log((e*x + d)^n*c)^2 + 4*a^3*b*log((e*x + d)^n*c) + a^4)/(g^2*x^2 + 2*f*
g*x + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**4/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log\left((ex+d)^n c\right) + a\right)^4}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^4/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^4/(g*x + f)^2, x)
```

3.64 $\int \log(a+bx)\,dx$

Optimal. Leaf size=19

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

Rubi [A] time = 0.0058197, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2389, 2295}

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x],x]
```

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \log(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log(x)\,dx,x,a+bx\right)}{b}\\ &= -x+\frac{(a+bx)\log(a+bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.0044641, size = 19, normalized size = 1.

$$\frac{(a+bx)\log(a+bx)}{b}-x$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x],x]
```

```
[Out] -x + ((a + b*x)*Log[a + b*x])/b
```

Maple [A] time = 0.056, size = 30, normalized size = 1.6

$$\ln\left(bx+a\right)x+\frac{\ln\left(bx+a\right)a}{b}-x-\frac{a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a),x)
```

```
[Out] ln(b*x+a)*x+1/b*ln(b*x+a)*a-x-a/b
```

Maxima [A] time = 1.15998, size = 31, normalized size = 1.63

$$-\frac{bx-\left(bx+a\right)\log\left(bx+a\right)+a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="maxima")
```

```
[Out] -(b*x - (b*x + a)*log(b*x + a) + a)/b
```

Fricas [A] time = 1.92999, size = 47, normalized size = 2.47

$$-\frac{bx-\left(bx+a\right)\log\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="fricas")
```

```
[Out] -(b*x - (b*x + a)*log(b*x + a))/b
```

Sympy [A] time = 0.302881, size = 24, normalized size = 1.26

$$-b\left(-\frac{a\log\left(a+bx\right)}{b^{2}}+\frac{x}{b}\right)+x\log\left(a+bx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a),x)
```

```
[Out] -b*(-a*log(a + b*x)/b**2 + x/b) + x*log(a + b*x)
```

Giac [A] time = 1.21122, size = 31, normalized size = 1.63

$$-\frac{bx-\left(bx+a\right)\log\left(bx+a\right)+a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a),x, algorithm="giac")

[Out] -(b*x - (b*x + a)*log(b*x + a) + a)/b
```

3.65 $\int \log^2(a+bx)\,dx$

Optimal. Leaf size=37

$$\frac{(a+bx)\log^2(a+bx)}{b}-\frac{2(a+bx)\log(a+bx)}{b}+2x$$

```
[Out] 2*x - (2*(a + b*x)*Log[a + b*x])/b + ((a + b*x)*Log[a + b*x]^2)/b
```

Rubi [A] time = 0.0143306, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2389, 2296, 2295}

$$\frac{(a+bx)\log^2(a+bx)}{b}-\frac{2(a+bx)\log(a+bx)}{b}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]^2,x]

[Out] 2*x - (2*(a + b*x)*Log[a + b*x])/b + ((a + b*x)*Log[a + b*x]^2)/b
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \log^2(a+bx)\,dx &= \frac{\operatorname{Subst}\left(\int \log^2(x)\,dx,x,a+bx\right)}{b}\\ &= \frac{(a+bx)\log^2(a+bx)}{b}-\frac{2\operatorname{Subst}(\int \log(x)\,dx,x,a+bx)}{b}\\ &= 2x-\frac{2(a+bx)\log(a+bx)}{b}+\frac{(a+bx)\log^2(a+bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.0043415, size = 36, normalized size = 0.97

$$\frac{(a+bx)\log^2(a+bx)-2(a+bx)\log(a+bx)+2bx}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]^2,x]
```

```
[Out] (2*b*x - 2*(a + b*x)*Log[a + b*x] + (a + b*x)*Log[a + b*x]^2)/b
```

Maple [A] time = 0.059, size = 55, normalized size = 1.5

$$(\ln(bx+a))^2 x + \frac{(\ln(bx+a))^2 a}{b} - 2\ln(bx+a)x - 2\frac{\ln(bx+a)a}{b} + 2x + 2\frac{a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)^2,x)
```

```
[Out] ln(b*x+a)^2*x+1/b*ln(b*x+a)^2*a-2*ln(b*x+a)*x-2/b*ln(b*x+a)*a+2*x+2*a/b
```

Maxima [A] time = 1.2412, size = 36, normalized size = 0.97

$$\frac{(bx+a)\left(\log(bx+a)^2 - 2\log(bx+a) + 2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(log(b*x + a)^2 - 2*log(b*x + a) + 2)/b
```

Fricas [A] time = 1.76001, size = 88, normalized size = 2.38

$$\frac{(bx+a)\log(bx+a)^2 + 2bx - 2(bx+a)\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] ((b*x + a)*log(b*x + a)^2 + 2*b*x - 2*(b*x + a)*log(b*x + a))/b
```

Sympy [A] time = 0.365685, size = 42, normalized size = 1.14

$$2b\left(-\frac{a\log(a+bx)}{b^2} + \frac{x}{b}\right) - 2x\log(a+bx) + \frac{(a+bx)\log(a+bx)^2}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)**2,x)
```

```
[Out] 2*b*(-a*log(a + b*x)/b**2 + x/b) - 2*x*log(a + b*x) + (a + b*x)*log(a + b*x
)**2/b
```

Giac [A] time = 1.31965, size = 59, normalized size = 1.59

$$\frac{(bx+a)\log(bx+a)^2}{b} - \frac{2(bx+a)\log(bx+a)}{b} + \frac{2(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^2,x, algorithm="giac")
```

```
[Out] (b*x + a)*log(b*x + a)^2/b - 2*(b*x + a)*log(b*x + a)/b + 2*(b*x + a)/b
```

3.66 $\int \log^3(a+bx)\,dx$

Optimal. Leaf size=55

$$\frac{(a+bx)\log^3(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{6(a+bx)\log(a+bx)}{b}-6x$$

```
[Out] -6*x + (6*(a + b*x)*Log[a + b*x])/b - (3*(a + b*x)*Log[a + b*x]^2)/b + ((a
+ b*x)*Log[a + b*x]^3)/b
```

Rubi [A] time = 0.0184441, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2389, 2296, 2295}

$$\frac{(a+bx)\log^3(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{6(a+bx)\log(a+bx)}{b}-6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]^3,x]
```

```
[Out] -6*x + (6*(a + b*x)*Log[a + b*x])/b - (3*(a + b*x)*Log[a + b*x]^2)/b + ((a
+ b*x)*Log[a + b*x]^3)/b
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \log^3(a+bx)\,dx &= \frac{\text{Subst}\left(\int \log^3(x)\,dx,x,a+bx\right)}{b}\\
&= \frac{(a+bx)\log^3(a+bx)}{b}-\frac{3\,\text{Subst}\left(\int \log^2(x)\,dx,x,a+bx\right)}{b}\\
&= -\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{(a+bx)\log^3(a+bx)}{b}+\frac{6\,\text{Subst}(\int \log(x)\,dx,x,a+bx)}{b}\\
&= -6x+\frac{6(a+bx)\log(a+bx)}{b}-\frac{3(a+bx)\log^2(a+bx)}{b}+\frac{(a+bx)\log^3(a+bx)}{b}
\end{aligned}$$

Mathematica [A] time = 0.0055469, size = 51, normalized size = 0.93

$$\frac{(a+bx)\log^3(a+bx)-3(a+bx)\log^2(a+bx)+6(a+bx)\log(a+bx)-6bx}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]^3,x]
```

```
[Out] (-6*b*x + 6*(a + b*x)*Log[a + b*x] - 3*(a + b*x)*Log[a + b*x]^2 + (a + b*x)
*Log[a + b*x]^3)/b
```

Maple [A] time = 0.057, size = 80, normalized size = 1.5

$$(\ln(bx+a))^3x+\frac{(\ln(bx+a))^3a}{b}-3(\ln(bx+a))^2x-3\frac{(\ln(bx+a))^2a}{b}+6\ln(bx+a)x+6\frac{\ln(bx+a)a}{b}-6x-6\frac{a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)^3,x)
```

```
[Out] ln(b*x+a)^3*x+1/b*ln(b*x+a)^3*a-3*ln(b*x+a)^2*x-3/b*ln(b*x+a)^2*a+6*ln(b*x+
a)*x+6/b*ln(b*x+a)*a-6*x-6*a/b
```

Maxima [A] time = 1.25495, size = 50, normalized size = 0.91

$$\frac{\left(\log(bx+a)^3-3\log(bx+a)^2+6\log(bx+a)-6\right)(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] (log(b*x + a)^3 - 3*log(b*x + a)^2 + 6*log(b*x + a) - 6)*(b*x + a)/b
```

Fricas [A] time = 1.92681, size = 127, normalized size = 2.31

$$\frac{(bx+a)\log(bx+a)^3-3(bx+a)\log(bx+a)^2-6bx+6(bx+a)\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] ((b*x + a)*log(b*x + a)^3 - 3*(b*x + a)*log(b*x + a)^2 - 6*b*x + 6*(b*x + a
)*log(b*x + a))/b
```

Sympy [A] time = 0.427488, size = 63, normalized size = 1.15

$$-6b\left(-\frac{a\log(a+bx)}{b^2}+\frac{x}{b}\right)+6x\log(a+bx)+\frac{(-3a-3bx)\log(a+bx)^2}{b}+\frac{(a+bx)\log(a+bx)^3}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)**3,x)
```

```
[Out] -6*b*(-a*log(a + b*x)/b**2 + x/b) + 6*x*log(a + b*x) + (-3*a - 3*b*x)*log(a
 + b*x)**2/b + (a + b*x)*log(a + b*x)**3/b
```

Giac [A] time = 1.19527, size = 84, normalized size = 1.53

$$\frac{(bx+a)\log(bx+a)^3}{b} - \frac{3(bx+a)\log(bx+a)^2}{b} + \frac{6(bx+a)\log(bx+a)}{b} - \frac{6(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + a)*log(b*x + a)^3/b - 3*(b*x + a)*log(b*x + a)^2/b + 6*(b*x + a)*log
(b*x + a)/b - 6*(b*x + a)/b
```

3.67 $\int \log(a + bx + cx)\,dx$

Optimal. Leaf size=25

$$\frac{(a + x(b + c))\log(a + x(b + c))}{b + c} - x$$

```
[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

Rubi [A] time = 0.0147451, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2444, 2389, 2295}

$$\frac{(a + x(b + c))\log(a + x(b + c))}{b + c} - x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x],x]
```

```
[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] &&  !LinearMatchQ[v, x] &&  !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \log(a + bx + cx)\,dx &= \int \log(a + (b + c)x)\,dx \\
&= \frac{\text{Subst}\left(\int \log(x)\,dx, x, a + (b + c)x\right)}{b + c} \\
&= -x + \frac{(a + (b + c)x)\log(a + (b + c)x)}{b + c}
\end{aligned}$$

Mathematica [A] time = 0.0068114, size = 25, normalized size = 1.

$$\frac{(a + x(b + c))\log(a + x(b + c))}{b + c} - x$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x],x]

[Out] -x + ((a + (b + c)*x)*Log[a + (b + c)*x])/(b + c)
```

Maple [B] time = 0.057, size = 75, normalized size = 3.

$$\frac{\ln\left(a+\left(b+c\right)x\right)xb}{b+c}+\frac{\ln\left(a+\left(b+c\right)x\right)xc}{b+c}+\frac{\ln\left(a+\left(b+c\right)x\right)a}{b+c}-\frac{bx}{b+c}-\frac{cx}{b+c}-\frac{a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a),x)

[Out] 1/(b+c)*ln(a+(b+c)*x)*x*b+1/(b+c)*ln(a+(b+c)*x)*x*c+1/(b+c)*ln(a+(b+c)*x)*a
-1/(b+c)*b*x-1/(b+c)*c*x-1/(b+c)*a
```

Maxima [A] time = 1.24484, size = 46, normalized size = 1.84

$$-\frac{bx+cx-\left(bx+cx+a\right)\log\left(bx+cx+a\right)+a}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="maxima")

[Out] -(b*x + c*x - (b*x + c*x + a)*log(b*x + c*x + a) + a)/(b + c)
```

Fricas [A] time = 2.00934, size = 80, normalized size = 3.2

$$-\frac{(b+c)x-((b+c)x+a)\log\left((b+c)x+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="fricas")

[Out] -((b + c)*x - ((b + c)*x + a)*log((b + c)*x + a))/(b + c)
```

Sympy [A] time = 0.357667, size = 36, normalized size = 1.44

$$x\log\left(a+bx+cx\right)+\left(-b-c\right)\left(-\frac{a\log\left(a+x\left(b+c\right)\right)}{\left(b+c\right)^{2}}+\frac{x}{b+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a),x)

[Out] x*log(a + b*x + c*x) + (-b - c)*(-a*log(a + x*(b + c))/(b + c)**2 + x/(b +
c))
```

Giac [A] time = 1.19796, size = 46, normalized size = 1.84

$$-\frac{bx + cx - (bx + cx + a)\log(bx + cx + a) + a}{b + c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a),x, algorithm="giac")
```

```
[Out] -(b*x + c*x - (b*x + c*x + a)*log(b*x + c*x + a) + a)/(b + c)
```

3.68 $\int \log^2(a+bx+cx)\,dx$

Optimal. Leaf size=49

$$\frac{(a+x(b+c))\log^2(a+x(b+c))}{b+c}-\frac{2(a+x(b+c))\log(a+x(b+c))}{b+c}+2x$$

```
[Out] 2*x - (2*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) + ((a + (b + c)*x)*Log
[a + (b + c)*x]^2)/(b + c)
```

Rubi [A] time = 0.0252992, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2444, 2389, 2296, 2295}

$$\frac{(a+x(b+c))\log^2(a+x(b+c))}{b+c}-\frac{2(a+x(b+c))\log(a+x(b+c))}{b+c}+2x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x]^2,x]
```

```
[Out] 2*x - (2*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) + ((a + (b + c)*x)*Log
[a + (b + c)*x]^2)/(b + c)
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] &&  !LinearMatchQ[v, x] &&  !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\int \log^2(a+bx+cx)\,dx = \int \log^2(a+(b+c)x)\,dx$$
$$= \frac{\text{Subst}\left(\int \log^2(x)\,dx, x, a+(b+c)x\right)}{b+c}$$
$$= \frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} - \frac{2\,\text{Subst}(\int \log(x)\,dx, x, a+(b+c)x)}{b+c}$$
$$= 2x - \frac{2(a+(b+c)x)\log(a+(b+c)x)}{b+c} + \frac{(a+(b+c)x)\log^2(a+(b+c)x)}{b+c}$$

Mathematica [A] time = 0.0062025, size = 48, normalized size = 0.98

$$\frac{(a+x(b+c))\log^2(a+x(b+c)) - 2(a+x(b+c))\log(a+x(b+c)) + 2x(b+c)}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x]^2,x]
```

```
[Out] (2*(b + c)*x - 2*(a + (b + c)*x)*Log[a + (b + c)*x] + (a + (b + c)*x)*Log[a
 + (b + c)*x]^2)/(b + c)
```

Maple [B] time = 0.057, size = 131, normalized size = 2.7

$$\frac{(\ln(a+(b+c)x))^2 xb}{b+c} + \frac{(\ln(a+(b+c)x))^2 xc}{b+c} + \frac{(\ln(a+(b+c)x))^2 a}{b+c} - 2\frac{\ln(a+(b+c)x)xb}{b+c} - 2\frac{\ln(a+(b+c)x)xc}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a)^2,x)
```

```
[Out] 1/(b+c)*ln(a+(b+c)*x)^2*x*b+1/(b+c)*ln(a+(b+c)*x)^2*x*c+1/(b+c)*ln(a+(b+c)*
x)^2*a-2/(b+c)*ln(a+(b+c)*x)*x*b-2/(b+c)*ln(a+(b+c)*x)*x*c-2/(b+c)*ln(a+(b+
c)*x)*a+2/(b+c)*b*x+2/(b+c)*c*x+2/(b+c)*a
```

Maxima [A] time = 1.18191, size = 51, normalized size = 1.04

$$\frac{(bx+cx+a)\left(\log(bx+cx+a)^2 - 2\log(bx+cx+a) + 2\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="maxima")
```

```
[Out] (b*x + c*x + a)*(log(b*x + c*x + a)^2 - 2*log(b*x + c*x + a) + 2)/(b + c)
```

Fricas [A] time = 1.91871, size = 136, normalized size = 2.78

$$\frac{((b+c)x+a)\log((b+c)x+a)^2 + 2(b+c)x - 2((b+c)x+a)\log((b+c)x+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="fricas")
```

```
[Out] (((b + c)*x + a)*log((b + c)*x + a)^2 + 2*(b + c)*x - 2*((b + c)*x + a)*log
((b + c)*x + a))/(b + c)
```

Sympy [A] time = 0.501055, size = 63, normalized size = 1.29

$$-2x\log\left(a+bx+cx\right)+\left(2b+2c\right)\left(-\frac{a\log\left(a+x\left(b+c\right)\right)}{\left(b+c\right)^{2}}+\frac{x}{b+c}\right)+\frac{\left(a+bx+cx\right)\log\left(a+bx+cx\right)^{2}}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a)**2,x)
```

```
[Out] -2*x*log(a + b*x + c*x) + (2*b + 2*c)*(-a*log(a + x*(b + c))/(b + c)**2 + x
/(b + c)) + (a + b*x + c*x)*log(a + b*x + c*x)**2/(b + c)
```

Giac [A] time = 1.21706, size = 88, normalized size = 1.8

$$\frac{\left(bx+cx+a\right)\log\left(bx+cx+a\right)^{2}}{b+c}-\frac{2\left(bx+cx+a\right)\log\left(bx+cx+a\right)}{b+c}+\frac{2\left(bx+cx+a\right)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^2,x, algorithm="giac")
```

```
[Out] (b*x + c*x + a)*log(b*x + c*x + a)^2/(b + c) - 2*(b*x + c*x + a)*log(b*x +
c*x + a)/(b + c) + 2*(b*x + c*x + a)/(b + c)
```

3.69 $\int \log^3(a+bx+cx)\,dx$

Optimal. Leaf size=73

$$\frac{(a+x(b+c))\log^3(a+x(b+c))}{b+c}-\frac{3(a+x(b+c))\log^2(a+x(b+c))}{b+c}+\frac{6(a+x(b+c))\log(a+x(b+c))}{b+c}-6x$$

```
[Out] -6*x + (6*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) - (3*(a + (b + c)*x)*
Log[a + (b + c)*x]^2)/(b + c) + ((a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b +
 c)
```

Rubi [A] time = 0.0317987, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2444, 2389, 2296, 2295}

$$\frac{(a+x(b+c))\log^3(a+x(b+c))}{b+c}-\frac{3(a+x(b+c))\log^2(a+x(b+c))}{b+c}+\frac{6(a+x(b+c))\log(a+x(b+c))}{b+c}-6x$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x + c*x]^3,x]
```

```
[Out] -6*x + (6*(a + (b + c)*x)*Log[a + (b + c)*x])/(b + c) - (3*(a + (b + c)*x)*
Log[a + (b + c)*x]^2)/(b + c) + ((a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b +
 c)
```

Rule 2444

```
Int[((a_.) + Log[(c_.)*(v_)^(n_.)]*(b_.))^(p_.)*(u_.), x_Symbol] :> Int[u*(
a + b*Log[c*ExpandToSum[v, x]^n])^p, x] /; FreeQ[{a, b, c, n, p}, x] && Lin
earQ[v, x] &&  !LinearMatchQ[v, x] &&  !(EqQ[n, 1] && MatchQ[c*v, (e_.)*((f
_) + (g_.)*x) /; FreeQ[{e, f, g}, x]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\int \log^3(a+bx+cx)\,dx = \int \log^3(a+(b+c)x)\,dx$$
$$= \frac{\text{Subst}\left(\int \log^3(x)\,dx, x, a+(b+c)x\right)}{b+c}$$
$$= \frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c} - \frac{3\,\text{Subst}\left(\int \log^2(x)\,dx, x, a+(b+c)x\right)}{b+c}$$
$$= -\frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} + \frac{(a+(b+c)x)\log^3(a+(b+c)x)}{b+c} + \frac{6\,\text{Subst}(\int \log(x)\,d}{b+}$$
$$= -6x + \frac{6(a+(b+c)x)\log(a+(b+c)x)}{b+c} - \frac{3(a+(b+c)x)\log^2(a+(b+c)x)}{b+c} + \frac{(a+(b+c)x}{}$$

Mathematica [A] time = 0.0084843, size = 67, normalized size = 0.92

$$\frac{(a+x(b+c))\log^3(a+x(b+c)) - 3(a+x(b+c))\log^2(a+x(b+c)) + 6(a+x(b+c))\log(a+x(b+c)) - 6x(b+c)}{b+c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x + c*x]^3,x]
```

```
[Out] (-6*(b + c)*x + 6*(a + (b + c)*x)*Log[a + (b + c)*x] - 3*(a + (b + c)*x)*Lo
g[a + (b + c)*x]^2 + (a + (b + c)*x)*Log[a + (b + c)*x]^3)/(b + c)
```

Maple [B] time = 0.059, size = 187, normalized size = 2.6

$$\frac{(\ln(a+(b+c)x))^3 xb}{b+c} + \frac{(\ln(a+(b+c)x))^3 xc}{b+c} + \frac{(\ln(a+(b+c)x))^3 a}{b+c} - 3\frac{(\ln(a+(b+c)x))^2 xb}{b+c} - 3\frac{(\ln(a+(b+c)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+c*x+a)^3,x)
```

```
[Out] 1/(b+c)*ln(a+(b+c)*x)^3*x*b+1/(b+c)*ln(a+(b+c)*x)^3*x*c+1/(b+c)*ln(a+(b+c)*
x)^3*a-3/(b+c)*ln(a+(b+c)*x)^2*x*b-3/(b+c)*ln(a+(b+c)*x)^2*x*c-3/(b+c)*ln(a
+(b+c)*x)^2*a+6/(b+c)*ln(a+(b+c)*x)*x*b+6/(b+c)*ln(a+(b+c)*x)*x*c+6/(b+c)*l
n(a+(b+c)*x)*a-6/(b+c)*b*x-6/(b+c)*c*x-6/(b+c)*a
```

Maxima [A] time = 1.23922, size = 69, normalized size = 0.95

$$\frac{\left(\log(bx+cx+a)^3 - 3\log(bx+cx+a)^2 + 6\log(bx+cx+a) - 6\right)(bx+cx+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="maxima")
```

```
[Out] (log(b*x + c*x + a)^3 - 3*log(b*x + c*x + a)^2 + 6*log(b*x + c*x + a) - 6)*
(b*x + c*x + a)/(b + c)
```

Fricas [A] time = 2.04405, size = 192, normalized size = 2.63

$$\frac{((b+c)x+a)\log((b+c)x+a)^3 - 3((b+c)x+a)\log((b+c)x+a)^2 - 6(b+c)x + 6((b+c)x+a)\log((b+c)x+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="fricas")
```

```
[Out] (((b + c)*x + a)*log((b + c)*x + a)^3 - 3*((b + c)*x + a)*log((b + c)*x + a
)^2 - 6*(b + c)*x + 6*((b + c)*x + a)*log((b + c)*x + a))/(b + c)
```

Sympy [A] time = 0.623432, size = 95, normalized size = 1.3

$$6x\log(a+bx+cx) + (-6b-6c)\left(-\frac{a\log(a+x(b+c))}{(b+c)^2} + \frac{x}{b+c}\right) + \frac{(-3a-3bx-3cx)\log(a+bx+cx)^2}{b+c} + \frac{(a+bx+cx)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+c*x+a)**3,x)
```

```
[Out] 6*x*log(a + b*x + c*x) + (-6*b - 6*c)*(-a*log(a + x*(b + c))/(b + c)**2 + x
/(b + c)) + (-3*a - 3*b*x - 3*c*x)*log(a + b*x + c*x)**2/(b + c) + (a + b*x
 + c*x)*log(a + b*x + c*x)**3/(b + c)
```

Giac [A] time = 1.24107, size = 123, normalized size = 1.68

$$\frac{(bx+cx+a)\log(bx+cx+a)^3}{b+c} - \frac{3(bx+cx+a)\log(bx+cx+a)^2}{b+c} + \frac{6(bx+cx+a)\log(bx+cx+a)}{b+c} - \frac{6(bx+cx+a)}{b+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+c*x+a)^3,x, algorithm="giac")
```

```
[Out] (b*x + c*x + a)*log(b*x + c*x + a)^3/(b + c) - 3*(b*x + c*x + a)*log(b*x +
c*x + a)^2/(b + c) + 6*(b*x + c*x + a)*log(b*x + c*x + a)/(b + c) - 6*(b*x
+ c*x + a)/(b + c)
```

3.70 $\int \log\left(c(d+ex)^n\right) dx$

Optimal. Leaf size=24

$$\frac{(d+ex)\log\left(c(d+ex)^n\right)}{e} - nx$$

```
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

Rubi [A] time = 0.0086375, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2295}

$$\frac{(d+ex)\log\left(c(d+ex)^n\right)}{e} - nx$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d + e*x)^n],x]
```

```
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \log\left(c(d+ex)^n\right) dx &= \frac{\text{Subst}\left(\int \log\left(cx^n\right) dx, x, d+ex\right)}{e}\\ &= -nx + \frac{(d+ex)\log\left(c(d+ex)^n\right)}{e}\end{aligned}$$

Mathematica [A] time = 0.0067945, size = 24, normalized size = 1.

$$\frac{(d+ex)\log\left(c(d+ex)^n\right)}{e} - nx$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d + e*x)^n],x]
```

```
[Out] -(n*x) + ((d + e*x)*Log[c*(d + e*x)^n])/e
```

Maple [A] time = 0.059, size = 30, normalized size = 1.3

$$\ln\left(c\,(ex+d)^{n}\right)x-nx+\frac{dn\ln\left(ex+d\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d)^n),x)
```

```
[Out] ln(c*(e*x+d)^n)*x-n*x+1/e*n*d*ln(e*x+d)
```

Maxima [A] time = 1.14588, size = 47, normalized size = 1.96

$$-en\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^{2}}\right)+x\log\left((ex+d)^{n}c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="maxima")
```

```
[Out] -e*n*(x/e - d*log(e*x + d)/e^2) + x*log((e*x + d)^n*c)
```

Fricas [A] time = 2.01158, size = 73, normalized size = 3.04

$$-\frac{enx-ex\log\left(c\right)-(enx+dn)\log\left(ex+d\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="fricas")
```

```
[Out] -(e*n*x - e*x*log(c) - (e*n*x + d*n)*log(e*x + d))/e
```

Sympy [A] time = 0.442061, size = 37, normalized size = 1.54

$$\begin{cases}\frac{dn\log\left(d+ex\right)}{e}+nx\log\left(d+ex\right)-nx+x\log\left(c\right) & \text{for } e\neq 0\\ x\log\left(cd^{n}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d)**n),x)
```

```
[Out] Piecewise((d*n*log(d + e*x)/e + n*x*log(d + e*x) - n*x + x*log(c), Ne(e, 0)
), (x*log(c*d**n), True))
```

Giac [A] time = 1.24072, size = 54, normalized size = 2.25

$$(xe+d)ne^{(-1)}\log\left(xe+d\right)-(xe+d)ne^{(-1)}+(xe+d)e^{(-1)}\log\left(c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d)^n),x, algorithm="giac")
```

```
[Out] (x*e + d)*n*e^(-1)*log(x*e + d) - (x*e + d)*n*e^(-1) + (x*e + d)*e^(-1)*log
(c)
```

3.71 $\int \frac{\log\left(-\frac{g(d+ex)}{ef-dg}\right)}{f+gx}\,dx$

Optimal. Leaf size=24

$$-\frac{\text{PolyLog}\left(2,\frac{e(f+gx)}{ef-dg}\right)}{g}$$

```
[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

Rubi [A] time = 0.026475, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{e(f+gx)}{ef-dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[Log[-((g*(d + e*x))/(e*f - d*g))]/(f + g*x),x]

[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(-\frac{g(d+ex)}{ef-dg}\right)}{f+gx}\,dx &= \frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{ex}{ef-dg}\right)}{x}\,dx,x,f+gx\right)}{g}\\ &= -\frac{\text{Li}_2\left(\frac{e(f+gx)}{ef-dg}\right)}{g}\end{aligned}$$

Mathematica [A] time = 0.00671, size = 24, normalized size = 1.

$$-\frac{\text{PolyLog}\left(2,\frac{e(f+gx)}{ef-dg}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-((g*(d + e*x))/(e*f - d*g))]/(f + g*x),x]
```

```
[Out] -(PolyLog[2, (e*(f + g*x))/(e*f - d*g)]/g)
```

Maple [A] time = 0.061, size = 35, normalized size = 1.5

$$-\frac{1}{g}\mathrm{dilog}\left(\frac{egx}{dg-fe}+\frac{dg}{dg-fe}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x)
```

```
[Out] -1/g*dilog(e*g/(d*g-e*f)*x+d*g/(d*g-e*f))
```

Maxima [B] time = 1.22021, size = 138, normalized size = 5.75

$$-\frac{\log\left(ex+d\right)\log\left(gx+f\right)}{g}+\frac{\log\left(gx+f\right)\log\left(-\frac{(ex+d)g}{ef-dg}\right)}{g}+\frac{\log\left(ex+d\right)\log\left(\frac{egx+dg}{ef-dg}+1\right)+\mathrm{Li}_2\left(-\frac{egx+dg}{ef-dg}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="maxima")
```

```
[Out] -log(e*x + d)*log(g*x + f)/g + log(g*x + f)*log(-(e*x + d)*g/(e*f - d*g))/g
 + (log(e*x + d)*log((e*g*x + d*g)/(e*f - d*g) + 1) + dilog(-(e*g*x + d*g)/
(e*f - d*g)))/g
```

Fricas [A] time = 2.07007, size = 55, normalized size = 2.29

$$-\frac{\mathrm{Li}_2\left(\frac{egx+dg}{ef-dg}+1\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="fricas")
```

```
[Out] -dilog((e*g*x + d*g)/(e*f - d*g) + 1)/g
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log\left(-\frac{dg}{-dg+ef}-\frac{egx}{-dg+ef}\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x)
```

```
[Out] Integral(log(-d*g/(-d*g + e*f) - e*g*x/(-d*g + e*f))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(-\frac{(ex+d)g}{ef-dg}\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(-g*(e*x+d)/(-d*g+e*f))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate(log(-(e*x + d)*g/(e*f - d*g))/(g*x + f), x)
```

3.72 $\int \frac{a+b\log\left(c\left(\frac{1}{c}+ex\right)\right)}{x}\,dx$

Optimal. Leaf size=15

$$a\log(x) - b\text{PolyLog}(2, -cex)$$

```
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

Rubi [A] time = 0.0193654, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2392, 2391}

$$a\log(x) - b\text{PolyLog}(2, -cex)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(c^(-1) + e*x)])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log\left(c\left(\frac{1}{c}+ex\right)\right)}{x}\,dx &= a\log(x)+b\int \frac{\log(1+cex)}{x}\,dx\\ &= a\log(x)-b\text{Li}_2(-cex)\end{aligned}$$

Mathematica [A] time = 0.0027481, size = 15, normalized size = 1.

$$a\log(x) - b\text{PolyLog}(2, -cex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(c^(-1) + e*x)])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(c*e*x)]
```

Maple [A] time = 0.06, size = 19, normalized size = 1.3

$$a\ln(cex) - b\,\text{dilog}(cex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(1/c+e*x)))/x,x)
```

```
[Out] a*ln(c*e*x)-b*dilog(c*e*x+1)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log(cex+1)}{x}\,dx + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(1/c+e*x)))/x,x, algorithm="maxima")
```

```
[Out] b*integrate(log(c*e*x + 1)/x, x) + a*log(x)
```

Fricas [A] time = 1.93335, size = 39, normalized size = 2.6

$$-b\mathrm{Li}_2(-cex) + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(1/c+e*x)))/x,x, algorithm="fricas")
```

```
[Out] -b*dilog(-c*e*x) + a*log(x)
```

Sympy [C] time = 5.34438, size = 17, normalized size = 1.13

$$a\log(x) - b\,\mathrm{Li}_2\left(cexe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(1/c+e*x)))/x,x)
```

```
[Out] a*log(x) - b*polylog(2, c*e*x*exp_polar(I*pi))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(ex+\frac{1}{c}\right)c\right)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(1/c+e*x)))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + 1/c)*c) + a)/x, x)
```

3.73 $\int \frac{\log(3+ex)}{x} \, dx$

Optimal. Leaf size=16

$$\log(3)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{3}\right)$$

```
[Out] Log[3]*Log[x] - PolyLog[2, -(e*x)/3]
```

Rubi [A] time = 0.0152334, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2392, 2391}

$$\log(3)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[Log[3 + e*x]/x,x]
```

```
[Out] Log[3]*Log[x] - PolyLog[2, -(e*x)/3]
```

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned} \int \frac{\log(3+ex)}{x} \, dx &= \log(3)\log(x) + \int \frac{\log\left(1+\frac{ex}{3}\right)}{x} \, dx \\ &= \log(3)\log(x) - \text{Li}_2\left(-\frac{ex}{3}\right) \end{aligned}$$

Mathematica [A] time = 0.0016655, size = 16, normalized size = 1.

$$\log(3)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[3 + e*x]/x,x]
```

```
[Out] Log[3]*Log[x] - PolyLog[2, -(e*x)/3]
```

Maple [B] time = 0.058, size = 33, normalized size = 2.1

$$\left(\ln\left(ex+3\right)-\ln\left(\frac{ex}{3}+1\right)\right)\ln\left(-\frac{ex}{3}\right)-\operatorname{dilog}\left(\frac{ex}{3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+3)/x,x)
```

```
[Out] (ln(e*x+3)-ln(1/3*e*x+1))*ln(-1/3*e*x)-dilog(1/3*e*x+1)
```

Maxima [A] time = 1.247, size = 27, normalized size = 1.69

$$\log\left(ex+3\right)\log\left(-\frac{1}{3}\,ex\right)+\mathrm{Li}_2\left(\frac{1}{3}\,ex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="maxima")
```

```
[Out] log(e*x + 3)*log(-1/3*e*x) + dilog(1/3*e*x + 1)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\log\left(ex+3\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="fricas")
```

```
[Out] integral(log(e*x + 3)/x, x)
```

Sympy [C] time = 2.97954, size = 68, normalized size = 4.25

$$\begin{cases} \log\left(3\right)\log\left(x\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ |x|<1 \\ -\log\left(3\right)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for}\ \frac{1}{|x|}<1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle|\,x\right)\log\left(3\right)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle|\,x\right)\log\left(3\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+3)/x,x)
```

```
[Out] Piecewise((log(3)*log(x) - polylog(2, e*x*exp_polar(I*pi)/3), Abs(x) < 1),
(-log(3)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/3), 1/Abs(x) < 1), (-mei
jerg(((), (1, 1)), ((0, 0), ()), x)*log(3) + meijerg(((1, 1), ()), ((), (0,
 0)), x)*log(3) - polylog(2, e*x*exp_polar(I*pi)/3), True))
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(ex+3)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+3)/x,x, algorithm="giac")
```

```
[Out] integrate(log(e*x + 3)/x, x)
```

3.74 $\int \frac{\log(2+ex)}{x}\,dx$

Optimal. Leaf size=16

$$\log(2)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{2}\right)$$

```
[Out] Log[2]*Log[x] - PolyLog[2, -(e*x)/2]
```

Rubi [A] time = 0.0149935, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2392, 2391}

$$\log(2)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[Log[2 + e*x]/x,x]
```

```
[Out] Log[2]*Log[x] - PolyLog[2, -(e*x)/2]
```

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{\log(2+ex)}{x}\,dx &= \log(2)\log(x) + \int \frac{\log\left(1+\frac{ex}{2}\right)}{x}\,dx\\ &= \log(2)\log(x) - \text{Li}_2\left(-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A] time = 0.0017052, size = 16, normalized size = 1.

$$\log(2)\log(x) - \text{PolyLog}\left(2, -\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[2 + e*x]/x,x]
```

```
[Out] Log[2]*Log[x] - PolyLog[2, -(e*x)/2]
```

Maple [B] time = 0.057, size = 33, normalized size = 2.1

$$\left(\ln\left(ex+2\right)-\ln\left(\frac{ex}{2}+1\right)\right)\ln\left(-\frac{ex}{2}\right)-\mathrm{dilog}\left(\frac{ex}{2}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+2)/x,x)
```

```
[Out] (ln(e*x+2)-ln(1/2*e*x+1))*ln(-1/2*e*x)-dilog(1/2*e*x+1)
```

Maxima [A] time = 1.20486, size = 27, normalized size = 1.69

$$\log\left(ex+2\right)\log\left(-\frac{1}{2}ex\right)+\mathrm{Li}_2\left(\frac{1}{2}ex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+2)/x,x, algorithm="maxima")
```

```
[Out] log(e*x + 2)*log(-1/2*e*x) + dilog(1/2*e*x + 1)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log\left(ex+2\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+2)/x,x, algorithm="fricas")
```

```
[Out] integral(log(e*x + 2)/x, x)
```

Sympy [C] time = 3.02837, size = 68, normalized size = 4.25

$$\begin{cases} \log(2)\log(x)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } |x|<1 \\ -\log(2)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|}<1 \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(2)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(2)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+2)/x,x)
```

```
[Out] Piecewise((log(2)*log(x) - polylog(2, e*x*exp_polar(I*pi)/2), Abs(x) < 1),
(-log(2)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/2), 1/Abs(x) < 1), (-mei
jerg(((), (1, 1)), ((0, 0), ()), x)*log(2) + meijerg(((1, 1), ()), ((), (0,
 0)), x)*log(2) - polylog(2, e*x*exp_polar(I*pi)/2), True))
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(ex+2)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+2)/x,x, algorithm="giac")
```

```
[Out] integrate(log(e*x + 2)/x, x)
```

3.75 $\int \frac{\log(1+ex)}{x}\,dx$

Optimal. Leaf size=8

$$-\text{PolyLog}(2,-ex)$$

```
[Out] -PolyLog[2, -(e*x)]
```

Rubi [A] time = 0.007346, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1, Rules used = {2391}

$$-\text{PolyLog}(2,-ex)$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 + e*x]/x,x]
```

```
[Out] -PolyLog[2, -(e*x)]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(1+ex)}{x}\,dx = -\text{Li}_2(-ex)$$

Mathematica [A] time = 0.0011049, size = 8, normalized size = 1.

$$-\text{PolyLog}(2,-ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 + e*x]/x,x]
```

```
[Out] -PolyLog[2, -(e*x)]
```

Maple [A] time = 0.059, size = 9, normalized size = 1.1

$$-\text{dilog}\,(ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x+1)/x,x)
```

```
[Out] -dilog(e*x+1)
```

Maxima [B] time = 1.26031, size = 26, normalized size = 3.25

$$\log(ex+1)\log(-ex) + \mathrm{Li}_2(ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+1)/x,x, algorithm="maxima")
```

```
[Out] log(e*x + 1)*log(-e*x) + dilog(e*x + 1)
```

Fricas [A] time = 1.9614, size = 19, normalized size = 2.38

$$-\mathrm{Li}_2(-ex)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+1)/x,x, algorithm="fricas")
```

```
[Out] -dilog(-e*x)
```

Sympy [C] time = 2.52224, size = 10, normalized size = 1.25

$$-\mathrm{Li}_2\left(exe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x+1)/x,x)
```

```
[Out] -polylog(2, e*x*exp_polar(I*pi))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(ex+1)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x+1)/x,x, algorithm="giac")
```

```
[Out] integrate(log(e*x + 1)/x, x)
```

3.76 $\int \frac{\log(ex)}{x} \, dx$

Optimal. Leaf size=10

$$\frac{1}{2}\log^2(ex)$$

[Out] Log[e*x]^2/2

Rubi [A] time = 0.0061649, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2301}

$$\frac{1}{2}\log^2(ex)$$

Antiderivative was successfully verified.

[In] Int[Log[e*x]/x,x]

[Out] Log[e*x]^2/2

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{\log(ex)}{x} \, dx = \frac{1}{2}\log^2(ex)$$

Mathematica [A] time = 0.0009162, size = 10, normalized size = 1.

$$\frac{1}{2}\log^2(ex)$$

Antiderivative was successfully verified.

[In] Integrate[Log[e*x]/x,x]

[Out] Log[e*x]^2/2

Maple [A] time = 0.058, size = 9, normalized size = 0.9

$$\frac{(\ln(ex))^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln(e*x)/x,x)

```
[Out] 1/2*ln(e*x)^2
```

Maxima [A] time = 1.19513, size = 11, normalized size = 1.1

$$\frac{1}{2}\log(ex)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="maxima")
```

```
[Out] 1/2*log(e*x)^2
```

Fricas [A] time = 1.81106, size = 22, normalized size = 2.2

$$\frac{1}{2}\log(ex)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="fricas")
```

```
[Out] 1/2*log(e*x)^2
```

Sympy [A] time = 0.086911, size = 7, normalized size = 0.7

$$\frac{\log(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x)/x,x)
```

```
[Out] log(e*x)**2/2
```

Giac [A] time = 1.21108, size = 12, normalized size = 1.2

$$\frac{1}{2}\log(xe)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x)/x,x, algorithm="giac")
```

```
[Out] 1/2*log(x*e)^2
```

3.77 $\int \frac{\log(-1+ex)}{x}\,dx$

Optimal. Leaf size=20

$$\text{PolyLog}(2,1-ex)+\log(ex)\log(ex-1)$$

```
[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

Rubi [A] time = 0.0185377, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2394, 2315}

$$\text{PolyLog}(2,1-ex)+\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Int[Log[-1 + e*x]/x,x]

[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log(-1+ex)}{x}\,dx &= \log(ex)\log(-1+ex)-e\int \frac{\log(ex)}{-1+ex}\,dx\\ &= \log(ex)\log(-1+ex)+\text{Li}_2(1-ex)\end{aligned}$$

Mathematica [A] time = 0.0017607, size = 20, normalized size = 1.

$$\text{PolyLog}(2,1-ex)+\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-1 + e*x]/x,x]

[Out] Log[e*x]*Log[-1 + e*x] + PolyLog[2, 1 - e*x]
```

Maple [A] time = 0.059, size = 17, normalized size = 0.9

$$\text{dilog}\,(ex)+\ln\,(ex)\ln\,(ex-1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x-1)/x,x)
```

```
[Out] dilog(e*x)+ln(e*x)*ln(e*x-1)
```

Maxima [A] time = 1.23756, size = 26, normalized size = 1.3

$$\log(ex-1)\log(ex) + \text{Li}_2(-ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="maxima")
```

```
[Out] log(e*x - 1)*log(e*x) + dilog(-e*x + 1)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(ex-1)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="fricas")
```

```
[Out] integral(log(e*x - 1)/x, x)
```

Sympy [C] time = 3.72385, size = 48, normalized size = 2.4

$$\begin{cases} i\pi\log(x) - \text{Li}_2(ex) & \text{for } |x| < 1 \\ -i\pi\log\left(\frac{1}{x}\right) - \text{Li}_2(ex) & \text{for } \frac{1}{|x|} < 1 \\ -i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right) + i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right) - \text{Li}_2(ex) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x-1)/x,x)
```

```
[Out] Piecewise((I*pi*log(x) - polylog(2, e*x), Abs(x) < 1), (-I*pi*log(1/x) - po
lylog(2, e*x), 1/Abs(x) < 1), (-I*pi*meijerg(((), (1, 1)), ((0, 0), ()), x)
 + I*pi*meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x), True))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(ex-1)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-1)/x,x, algorithm="giac")
```

```
[Out] integrate(log(e*x - 1)/x, x)
```

3.78 $\int \frac{\log(-2+ex)}{x} \, dx$

Optimal. Leaf size=25

$$\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, 1 - (e*x)/2]
```

Rubi [A] time = 0.0197499, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2394, 2315}

$$\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Int[Log[-2 + e*x]/x,x]
```

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, 1 - (e*x)/2]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log(-2+ex)}{x} \, dx &= \log\left(\frac{ex}{2}\right)\log(-2+ex)-e\int \frac{\log\left(\frac{ex}{2}\right)}{-2+ex} \, dx\\
&= \log\left(\frac{ex}{2}\right)\log(-2+ex)+\text{Li}_2\left(1-\frac{ex}{2}\right)
\end{aligned}$$

Mathematica [A] time = 0.0019247, size = 27, normalized size = 1.08

$$\text{PolyLog}\left(2,\frac{1}{2}(2-ex)\right)+\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[-2 + e*x]/x,x]
```

```
[Out] Log[(e*x)/2]*Log[-2 + e*x] + PolyLog[2, (2 - e*x)/2]
```

Maple [A] time = 0.057, size = 19, normalized size = 0.8

$$\operatorname{dilog}\left(\frac{ex}{2}\right)+\ln\left(\frac{ex}{2}\right)\ln\left(ex-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*x-2)/x,x)
```

```
[Out] dilog(1/2*e*x)+ln(1/2*e*x)*ln(e*x-2)
```

Maxima [A] time = 1.2387, size = 27, normalized size = 1.08

$$\log\left(ex-2\right)\log\left(\frac{1}{2}\,ex\right)+\operatorname{Li}_2\left(-\frac{1}{2}\,ex+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="maxima")
```

```
[Out] log(e*x - 2)*log(1/2*e*x) + dilog(-1/2*e*x + 1)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\log\left(ex-2\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="fricas")
```

```
[Out] integral(log(e*x - 2)/x, x)
```

Sympy [C] time = 3.99814, size = 88, normalized size = 3.52

$$\begin{cases} \log(2)\log(x)+3i\pi\log(x)-\operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -\log(2)\log\left(\frac{1}{x}\right)-3i\pi\log\left(\frac{1}{x}\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)\log(2)-3i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)+G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)\log(2)+3i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)-\operatorname{Li}_2\left(\frac{ex}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*x-2)/x,x)
```

```
[Out] Piecewise((log(2)*log(x) + 3*I*pi*log(x) - polylog(2, e*x/2), Abs(x) < 1),
(-log(2)*log(1/x) - 3*I*pi*log(1/x) - polylog(2, e*x/2), 1/Abs(x) < 1), (-m
eijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) - 3*I*pi*meijerg(((), (1, 1)),
 ((0, 0), ()), x) + meijerg(((1, 1), ()), ((), (0, 0)), x)*log(2) + 3*I*pi*
meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x/2), True))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(ex-2)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*x-2)/x,x, algorithm="giac")
```

```
[Out] integrate(log(e*x - 2)/x, x)
```

3.79 $\int \frac{a+b\log(3+ex)}{x}\,dx$

Optimal. Leaf size=21

$$\log(x)(a+b\log(3))-b\text{PolyLog}\left(2,-\frac{ex}{3}\right)$$

```
[Out] (a + b*Log[3])*Log[x] - b*PolyLog[2, -(e*x)/3]
```

Rubi [A] time = 0.0208121, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2392, 2391}

$$\log(x)(a+b\log(3))-b\text{PolyLog}\left(2,-\frac{ex}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[3 + e*x])/x,x]
```

```
[Out] (a + b*Log[3])*Log[x] - b*PolyLog[2, -(e*x)/3]
```

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(3+ex)}{x}\,dx &= (a+b\log(3))\log(x)+b\int \frac{\log\left(1+\frac{ex}{3}\right)}{x}\,dx\\ &= (a+b\log(3))\log(x)-b\text{Li}_2\left(-\frac{ex}{3}\right)\end{aligned}$$

Mathematica [A] time = 0.0019859, size = 22, normalized size = 1.05

$$-b\text{PolyLog}\left(2,-\frac{ex}{3}\right)+a\log(x)+b\log(3)\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[3 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[3]*Log[x] - b*PolyLog[2, -(e*x)/3]
```

Maple [B] time = 0.06, size = 46, normalized size = 2.2

$$a\ln(ex)+\ln(ex+3)\ln\left(-\frac{ex}{3}\right)b-\ln\left(\frac{ex}{3}+1\right)\ln\left(-\frac{ex}{3}\right)b-\mathrm{dilog}\left(\frac{ex}{3}+1\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+3))/x,x)
```

```
[Out] a*ln(e*x)+ln(e*x+3)*ln(-1/3*e*x)*b-ln(1/3*e*x+1)*ln(-1/3*e*x)*b-dilog(1/3*e
*x+1)*b
```

Maxima [A] time = 1.52034, size = 36, normalized size = 1.71

$$\left(\log(ex+3)\log\left(-\frac{1}{3}ex\right)+\mathrm{Li}_2\left(\frac{1}{3}ex+1\right)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x + 3)*log(-1/3*e*x) + dilog(1/3*e*x + 1))*b + a*log(x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log(ex+3)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x + 3) + a)/x, x)
```

Sympy [A] time = 3.91196, size = 75, normalized size = 3.57

$$a\log(x)+b\left(\begin{cases}\log(3)\log(x)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } |x|<1\\ -\log(3)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{for } \frac{1}{|x|}<1\\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle| x\right)\log(3)+G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle| x\right)\log(3)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{3}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+3))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((log(3)*log(x) - polylog(2, e*x*exp_polar(I*pi)/3),
Abs(x) < 1), (-log(3)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/3), 1/Abs(x
) < 1), (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(3) + meijerg(((1, 1),
()), ((), (0, 0)), x)*log(3) - polylog(2, e*x*exp_polar(I*pi)/3), True))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log (ex + 3) + a}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+3))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x + 3) + a)/x, x)
```

3.80 $\int \frac{a+b\log(2+ex)}{x}\,dx$

Optimal. Leaf size=21

$$\log(x)(a+b\log(2))-b\text{PolyLog}\left(2,-\frac{ex}{2}\right)$$

```
[Out] (a + b*Log[2])*Log[x] - b*PolyLog[2, -(e*x)/2]
```

Rubi [A] time = 0.0214168, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2392, 2391}

$$\log(x)(a+b\log(2))-b\text{PolyLog}\left(2,-\frac{ex}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[2 + e*x])/x,x]
```

```
[Out] (a + b*Log[2])*Log[x] - b*PolyLog[2, -(e*x)/2]
```

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(2+ex)}{x}\,dx&=(a+b\log(2))\log(x)+b\int \frac{\log\left(1+\frac{ex}{2}\right)}{x}\,dx\\&=(a+b\log(2))\log(x)-b\text{Li}_2\left(-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A] time = 0.0019993, size = 22, normalized size = 1.05

$$-b\text{PolyLog}\left(2,-\frac{ex}{2}\right)+a\log(x)+b\log(2)\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[2 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[2]*Log[x] - b*PolyLog[2, -(e*x)/2]
```

Maple [B] time = 0.066, size = 46, normalized size = 2.2

$$a\ln(ex)+\ln(ex+2)\ln\left(-\frac{ex}{2}\right)b-\ln\left(\frac{ex}{2}+1\right)\ln\left(-\frac{ex}{2}\right)b-\mathrm{dilog}\left(\frac{ex}{2}+1\right)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+2))/x,x)
```

```
[Out] a*ln(e*x)+ln(e*x+2)*ln(-1/2*e*x)*b-ln(1/2*e*x+1)*ln(-1/2*e*x)*b-dilog(1/2*e
*x+1)*b
```

Maxima [A] time = 1.77969, size = 36, normalized size = 1.71

$$\left(\log(ex+2)\log\left(-\frac{1}{2}ex\right)+\mathrm{Li}_2\left(\frac{1}{2}ex+1\right)\right)b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x + 2)*log(-1/2*e*x) + dilog(1/2*e*x + 1))*b + a*log(x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log(ex+2)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x + 2) + a)/x, x)
```

Sympy [A] time = 3.93505, size = 75, normalized size = 3.57

$$a\log(x)+b\left(\begin{cases}\log(2)\log(x)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } |x|<1\\ -\log(2)\log\left(\frac{1}{x}\right)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{for } \frac{1}{|x|}<1\\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1\\ 0,0 & \end{matrix}\middle| x\right)\log(2)+G_{2,2}^{0,2}\left(\begin{matrix}1,1 & \\ & 0,0\end{matrix}\middle| x\right)\log(2)-\mathrm{Li}_2\left(\frac{exe^{i\pi}}{2}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+2))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((log(2)*log(x) - polylog(2, e*x*exp_polar(I*pi)/2),
Abs(x) < 1), (-log(2)*log(1/x) - polylog(2, e*x*exp_polar(I*pi)/2), 1/Abs(x
) < 1), (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) + meijerg(((1, 1),
()), ((), (0, 0)), x)*log(2) - polylog(2, e*x*exp_polar(I*pi)/2), True))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log(ex+2)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x + 2) + a)/x, x)
```

3.81 $\int \frac{a+b\log(1+ex)}{x}\,dx$

Optimal. Leaf size=14

$$a\log(x) - b\text{PolyLog}(2, -ex)$$

```
[Out] a*Log[x] - b*PolyLog[2, -(e*x)]
```

Rubi [A] time = 0.0183462, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2392, 2391}

$$a\log(x) - b\text{PolyLog}(2, -ex)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[1 + e*x])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(e*x)]
```

Rule 2392

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/(x_), x_Symbol] :> Simp[
(a + b*Log[c*d])*Log[x], x] + Dist[b, Int[Log[1 + (e*x)/d]/x, x], x] /; Fre
eQ[{a, b, c, d, e}, x] && GtQ[c*d, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned} \int \frac{a+b\log(1+ex)}{x}\,dx &= a\log(x) + b\int \frac{\log(1+ex)}{x}\,dx \\ &= a\log(x) - b\text{Li}_2(-ex) \end{aligned}$$

Mathematica [A] time = 0.0015947, size = 14, normalized size = 1.

$$a\log(x) - b\text{PolyLog}(2, -ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[1 + e*x])/x,x]
```

```
[Out] a*Log[x] - b*PolyLog[2, -(e*x)]
```

Maple [A] time = 0.061, size = 17, normalized size = 1.2

$$a\ln(ex) - b\,\text{dilog}(ex+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x+1))/x,x)
```

```
[Out] a*ln(e*x)-b*dilog(e*x+1)
```

Maxima [A] time = 1.3834, size = 35, normalized size = 2.5

$$(\log(ex+1)\log(-ex) + \mathrm{Li}_2(ex+1))b + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x + 1)*log(-e*x) + dilog(e*x + 1))*b + a*log(x)
```

Fricas [A] time = 2.06495, size = 36, normalized size = 2.57

$$-b\mathrm{Li}_2(-ex) + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="fricas")
```

```
[Out] -b*dilog(-e*x) + a*log(x)
```

Sympy [C] time = 3.45331, size = 15, normalized size = 1.07

$$a\log(x) - b\,\mathrm{Li}_2\left(exe^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x+1))/x,x)
```

```
[Out] a*log(x) - b*polylog(2, e*x*exp_polar(I*pi))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log(ex+1)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x+1))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x + 1) + a)/x, x)
```

3.82 $\int \frac{a+b\log(ex)}{x}\,dx$

Optimal. Leaf size=17

$$\frac{(a+b\log(ex))^2}{2b}$$

```
[Out] (a + b*Log[e*x])^2/(2*b)
```

Rubi [A] time = 0.0112685, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {2301}

$$\frac{(a+b\log(ex))^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[e*x])/x,x]

[Out] (a + b*Log[e*x])^2/(2*b)
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{a+b\log(ex)}{x}\,dx=\frac{(a+b\log(ex))^2}{2b}$$

Mathematica [A] time = 0.0013259, size = 16, normalized size = 0.94

$$a\log(x)+\frac{1}{2}b\log^2(ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[e*x])/x,x]

[Out] a*Log[x] + (b*Log[e*x]^2)/2
```

Maple [A] time = 0.059, size = 17, normalized size = 1.

$$\frac{(\ln(ex))^2 b}{2}+a\ln(ex)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x))/x,x)
```

```
[Out] 1/2*ln(e*x)^2*b+a*ln(e*x)
```

Maxima [A] time = 1.18602, size = 20, normalized size = 1.18

$$\frac{(b\log(ex) + a)^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x))/x,x, algorithm="maxima")
```

```
[Out] 1/2*(b*log(e*x) + a)^2/b
```

Fricas [A] time = 1.92302, size = 42, normalized size = 2.47

$$\frac{1}{2}b\log(ex)^2 + a\log(ex)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x))/x,x, algorithm="fricas")
```

```
[Out] 1/2*b*log(e*x)^2 + a*log(e*x)
```

Sympy [A] time = 0.275289, size = 14, normalized size = 0.82

$$a\log(x) + \frac{b\log(ex)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x))/x,x)
```

```
[Out] a*log(x) + b*log(e*x)**2/2
```

Giac [A] time = 1.20601, size = 24, normalized size = 1.41

$$\frac{1}{2}b\log(xe)^2 + a\log(xe)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x))/x,x, algorithm="giac")
```

```
[Out] 1/2*b*log(x*e)^2 + a*log(x*e)
```

3.83 $\int \frac{a+b\log(-1+ex)}{x}\,dx$

Optimal. Leaf size=26

$$b\text{PolyLog}(2,1-ex)+\log(ex)(a+b\log(ex-1))$$

```
[Out] Log[e*x]*(a + b*Log[-1 + e*x]) + b*PolyLog[2, 1 - e*x]
```

Rubi [A] time = 0.0222327, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2394, 2315}

$$b\text{PolyLog}(2,1-ex)+\log(ex)(a+b\log(ex-1))$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[-1 + e*x])/x,x]
```

```
[Out] Log[e*x]*(a + b*Log[-1 + e*x]) + b*PolyLog[2, 1 - e*x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(-1+ex)}{x}\,dx &= \log(ex)(a+b\log(-1+ex))-(be)\int \frac{\log(ex)}{-1+ex}\,dx\\ &= \log(ex)(a+b\log(-1+ex))+b\text{Li}_2(1-ex)\end{aligned}$$

Mathematica [A] time = 0.0022989, size = 27, normalized size = 1.04

$$b\text{PolyLog}(2,1-ex)+a\log(x)+b\log(ex)\log(ex-1)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[-1 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[e*x]*Log[-1 + e*x] + b*PolyLog[2, 1 - e*x]
```

Maple [A] time = 0.065, size = 26, normalized size = 1.

$$a\ln(ex)+\ln(ex)\ln(ex-1)\,b+\text{dilog}(ex)\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x-1))/x,x)
```

```
[Out] a*ln(e*x)+ln(e*x)*ln(e*x-1)*b+dilog(e*x)*b
```

Maxima [A] time = 1.73951, size = 35, normalized size = 1.35

$$(\log(ex-1)\log(ex)+\mathrm{Li}_2(-ex+1))b+a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x - 1)*log(e*x) + dilog(-e*x + 1))*b + a*log(x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log(ex-1)+a}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x - 1) + a)/x, x)
```

Sympy [A] time = 4.64911, size = 54, normalized size = 2.08

$$a\log(x)+b\left(\begin{cases} i\pi\log(x)-\mathrm{Li}_2(ex) & \text{for } |x|<1 \\ -i\pi\log\left(\frac{1}{x}\right)-\mathrm{Li}_2(ex) & \text{for } \frac{1}{|x|}<1 \\ -i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x\right)+i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x\right)-\mathrm{Li}_2(ex) & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x-1))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((I*pi*log(x) - polylog(2, e*x), Abs(x) < 1), (-I*pi*
log(1/x) - polylog(2, e*x), 1/Abs(x) < 1), (-I*pi*meijerg(((), (1, 1)), ((0
, 0), ()), x) + I*pi*meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*
x), True))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log(ex-1)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-1))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x - 1) + a)/x, x)
```

3.84 $\int \frac{a+b\log(-2+ex)}{x}\,dx$

Optimal. Leaf size=31

$$b\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)(a+b\log(ex-2))$$

```
[Out] Log[(e*x)/2]*(a + b*Log[-2 + e*x]) + b*PolyLog[2, 1 - (e*x)/2]
```

Rubi [A] time = 0.0227376, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2394, 2315}

$$b\text{PolyLog}\left(2,1-\frac{ex}{2}\right)+\log\left(\frac{ex}{2}\right)(a+b\log(ex-2))$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[-2 + e*x])/x,x]
```

```
[Out] Log[(e*x)/2]*(a + b*Log[-2 + e*x]) + b*PolyLog[2, 1 - (e*x)/2]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(-2+ex)}{x}\,dx &= \log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))-(be)\int \frac{\log\left(\frac{ex}{2}\right)}{-2+ex}\,dx\\ &= \log\left(\frac{ex}{2}\right)(a+b\log(-2+ex))+b\text{Li}_2\left(1-\frac{ex}{2}\right)\end{aligned}$$

Mathematica [A] time = 0.0024037, size = 34, normalized size = 1.1

$$b\text{PolyLog}\left(2,\frac{1}{2}(2-ex)\right)+a\log(x)+b\log\left(\frac{ex}{2}\right)\log(ex-2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[-2 + e*x])/x,x]
```

```
[Out] a*Log[x] + b*Log[(e*x)/2]*Log[-2 + e*x] + b*PolyLog[2, (2 - e*x)/2]
```

Maple [A] time = 0.06, size = 28, normalized size = 0.9

$$a \ln (ex) + \ln (ex - 2) \ln \left(\frac{ex}{2}\right) b + \operatorname{dilog}\left(\frac{ex}{2}\right) b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e*x-2))/x,x)
```

```
[Out] a*ln(e*x)+ln(e*x-2)*ln(1/2*e*x)*b+dilog(1/2*e*x)*b
```

Maxima [A] time = 1.50992, size = 36, normalized size = 1.16

$$\left(\log (ex - 2) \log \left(\frac{1}{2} ex\right) + \operatorname{Li}_2\left(-\frac{1}{2} ex + 1\right)\right) b + a \log (x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="maxima")
```

```
[Out] (log(e*x - 2)*log(1/2*e*x) + dilog(-1/2*e*x + 1))*b + a*log(x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{b \log (ex - 2) + a}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log(e*x - 2) + a)/x, x)
```

Sympy [A] time = 4.95032, size = 95, normalized size = 3.06

$$a \log (x) + b \left(\begin{cases} \log (2) \log (x) + 3i\pi \log (x) - \operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -\log (2) \log \left(\frac{1}{x}\right) - 3i\pi \log \left(\frac{1}{x}\right) - \operatorname{Li}_2\left(\frac{ex}{2}\right) \\ -G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix} \middle| x\right) \log (2) - 3i\pi G_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix} \middle| x\right) + G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix} \middle| x\right) \log (2) + 3i\pi G_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix} \middle| x\right) \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e*x-2))/x,x)
```

```
[Out] a*log(x) + b*Piecewise((log(2)*log(x) + 3*I*pi*log(x) - polylog(2, e*x/2),
Abs(x) < 1), (-log(2)*log(1/x) - 3*I*pi*log(1/x) - polylog(2, e*x/2), 1/Abs
(x) < 1), (-meijerg(((), (1, 1)), ((0, 0), ()), x)*log(2) - 3*I*pi*meijerg(
((), (1, 1)), ((0, 0), ()), x) + meijerg(((1, 1), ()), ((), (0, 0)), x)*log
(2) + 3*I*pi*meijerg(((1, 1), ()), ((), (0, 0)), x) - polylog(2, e*x/2), Tr
ue))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log(ex-2)+a}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e*x-2))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log(e*x - 2) + a)/x, x)
```

3.85 $\int x^2 \log^2(c(a+bx)^n)\,dx$

Optimal. Leaf size=187

$$\frac{2a^3n\log(a+bx)\log(c(a+bx)^n)}{3b^3}-\frac{2a^2n(a+bx)\log(c(a+bx)^n)}{b^3}+\frac{2a^2n^2x}{b^2}-\frac{a^3n^2\log^2(a+bx)}{3b^3}+\frac{an(a+bx)^2\log(c(}{b^3}$$

```
[Out] (2*a^2*n^2*x)/b^2 - (a*n^2*(a + b*x)^2)/(2*b^3) + (2*n^2*(a + b*x)^3)/(27*b
^3) - (a^3*n^2*Log[a + b*x]^2)/(3*b^3) - (2*a^2*n*(a + b*x)*Log[c*(a + b*x)
^n])/b^3 + (a*n*(a + b*x)^2*Log[c*(a + b*x)^n])/b^3 - (2*n*(a + b*x)^3*Log[
c*(a + b*x)^n])/(9*b^3) + (2*a^3*n*Log[a + b*x]*Log[c*(a + b*x)^n])/(3*b^3)
 + (x^3*Log[c*(a + b*x)^n]^2)/3
```

Rubi [A] time = 0.191644, antiderivative size = 156, normalized size of antiderivative = 0.83, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301}

$$-\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3}-\frac{6a^3\log(a+bx)}{b^3}-\frac{9a(a+bx)^2}{b^3}+\frac{2(a+bx)^3}{b^3}\right)\log(c(a+bx)^n)+\frac{2a^2n^2x}{b^2}-\frac{a^3n^2\log^2(a+bx)}{3b^3}-$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[c*(a + b*x)^n]^2,x]
```

```
[Out] (2*a^2*n^2*x)/b^2 - (a*n^2*(a + b*x)^2)/(2*b^3) + (2*n^2*(a + b*x)^3)/(27*b
^3) - (a^3*n^2*Log[a + b*x]^2)/(3*b^3) - (n*((18*a^2*(a + b*x))/b^3 - (9*a*
(a + b*x)^2)/b^3 + (2*(a + b*x)^3)/b^3 - (6*a^3*Log[a + b*x])/b^3)*Log[c*(a
 + b*x)^n])/9 + (x^3*Log[c*(a + b*x)^n]^2)/3
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
```

```
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int x^2 \log^2\left(c(a+bx)^n\right) dx = \frac{1}{3}x^3\log^2\left(c(a+bx)^n\right) - \frac{1}{3}(2bn)\int \frac{x^3\log\left(c(a+bx)^n\right)}{a+bx}dx$$

$$= \frac{1}{3}x^3\log^2\left(c(a+bx)^n\right) - \frac{1}{3}(2n)\,\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3\log\left(cx^n\right)}{x}dx, x, a+bx\right)$$

$$= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+bx)^n\right) + \frac{1}{3}x^3\,\text{lo}$$

$$= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+bx)^n\right) + \frac{1}{3}x^3\,\text{lo}$$

$$= -\frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \frac{6a^3\log(a+bx)}{b^3}\right)\log\left(c(a+bx)^n\right) + \frac{1}{3}x^3\,\text{lo}$$

$$= \frac{2a^2n^2x}{b^2} - \frac{an^2(a+bx)^2}{2b^3} + \frac{2n^2(a+bx)^3}{27b^3} - \frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+bx)^2}{b^3} + \frac{2(a+bx)^3}{b^3} - \ldots\right.$$

$$= \frac{2a^2n^2x}{b^2} - \frac{an^2(a+bx)^2}{2b^3} + \frac{2n^2(a+bx)^3}{27b^3} - \frac{a^3n^2\log^2(a+bx)}{3b^3} - \frac{1}{9}n\left(\frac{18a^2(a+bx)}{b^3} - \frac{9a(a+b\ldots}{b^3}\right.$$

Mathematica [A] time = 0.0483155, size = 163, normalized size = 0.87

$$\frac{a^3\log^2\left(c(a+bx)^n\right)}{3b^3} - \frac{11a^3n\log\left(c(a+bx)^n\right)}{9b^3} - \frac{2a^2nx\log\left(c(a+bx)^n\right)}{3b^2} + \frac{11a^2n^2x}{9b^2} + \frac{1}{3}x^3\log^2\left(c(a+bx)^n\right) + \frac{anx^2\log(c(a\ldots}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[c*(a + b*x)^n]^2,x]
```

```
[Out] (11*a^2*n^2*x)/(9*b^2) - (5*a*n^2*x^2)/(18*b) + (2*n^2*x^3)/27 - (11*a^3*n*
Log[c*(a + b*x)^n])/(9*b^3) - (2*a^2*n*x*Log[c*(a + b*x)^n])/(3*b^2) + (a*n
*x^2*Log[c*(a + b*x)^n])/(3*b) - (2*n*x^3*Log[c*(a + b*x)^n])/9 + (a^3*Log[
c*(a + b*x)^n]^2)/(3*b^3) + (x^3*Log[c*(a + b*x)^n]^2)/3
```

Maple [C] time = 0.534, size = 1300, normalized size = 7.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(c*(b*x+a)^n)^2,x)
```

```
[Out] 2/27*n^2*x^3-11/9*a^3*n^2/b^3*ln(b*x+a)-1/3*I/b^2*Pi*a^2*n*x*csgn(I*c*(b*x+
a)^n)^2*csgn(I*c)+1/3*ln(c)^2*x^3-2/3/b^2*ln(c)*a^2*n*x+1/6*Pi^2*x^3*csgn(I
*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)-1/12*Pi^2*x^3*csgn(I*(b*x+a)^
n)^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)^2-1/3*Pi^2*x^3*csgn(I*(b*x+a)^n)*csgn(
I*c*(b*x+a)^n)^4*csgn(I*c)+1/6*Pi^2*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^
n)^3*csgn(I*c)^2-1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)^3+1/9*I*n*Pi*x^3*cs
gn(I*c*(b*x+a)^n)^3+1/3/b*ln(c)*a*n*x^2+2/3/b^3*ln(c)*ln(b*x+a)*a^3*n-1/12*
Pi^2*x^3*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^4+1/6*Pi^2*x^3*csgn(I*(b*x
+a)^n)*csgn(I*c*(b*x+a)^n)^5+1/6*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^5*csgn(I*c)-1
/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-5/18/b*a*n^2*x^2-2/9*n*ln(c)
*x^3-1/12*Pi^2*x^3*csgn(I*c*(b*x+a)^n)^6+1/3*I*ln(c)*Pi*x^3*csgn(I*(b*x+a)^
n)*csgn(I*c*(b*x+a)^n)^2+1/3*I*ln(c)*Pi*x^3*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)
-1/9*I*n*Pi*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/9*I*n*Pi*x^3*csgn
(I*c*(b*x+a)^n)^2*csgn(I*c)+1/9*(3*I*Pi*b^3*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*
(b*x+a)^n)^2-3*I*Pi*b^3*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)
-3*I*Pi*b^3*x^3*csgn(I*c*(b*x+a)^n)^3+3*I*Pi*b^3*x^3*csgn(I*c*(b*x+a)^n)^2*
csgn(I*c)+6*ln(c)*b^3*x^3-2*b^3*n*x^3+3*a*b^2*n*x^2+6*a^3*n*ln(b*x+a)-6*a^2
*b*n*x)/b^3*ln((b*x+a)^n)+1/3*x^3*ln((b*x+a)^n)^2-1/6*I/b*Pi*a*n*x^2*csgn(I
*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn
(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+1/3*I/b^2*Pi*a^2*n*x*csgn(I*(b*
x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+1/6*I/b*Pi*a*n*x^2*csgn(I*(b*x+a)^n)*
csgn(I*c*(b*x+a)^n)^2+1/6*I/b*Pi*a*n*x^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/
3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+1/3*I/b^
3*Pi*ln(b*x+a)*a^3*n*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/3*I/b^2*Pi*a^2*n*x*c
sgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+11/9*a^2*n^2*x/b^2-1/3*a^3*n^2*ln(b*
x+a)^2/b^3+1/9*I*n*Pi*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1
/3*I*ln(c)*Pi*x^3*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/6*I/b*P
i*a*n*x^2*csgn(I*c*(b*x+a)^n)^3-1/3*I/b^3*Pi*ln(b*x+a)*a^3*n*csgn(I*c*(b*x+
a)^n)^3+1/3*I/b^2*Pi*a^2*n*x*csgn(I*c*(b*x+a)^n)^3
```

Maxima [A] time = 1.22553, size = 177, normalized size = 0.95

$$\frac{1}{3}x^3\log\left((bx+a)^n c\right)^2+\frac{1}{9}bn\left(\frac{6a^3\log(bx+a)}{b^4}-\frac{2b^2x^3-3abx^2+6a^2x}{b^3}\right)\log\left((bx+a)^n c\right)+\frac{\left(4b^3x^3-15ab^2x^2-18a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*log((b*x + a)^n*c)^2 + 1/9*b*n*(6*a^3*log(b*x + a)/b^4 - (2*b^2*x^3
 - 3*a*b*x^2 + 6*a^2*x)/b^3)*log((b*x + a)^n*c) + 1/54*(4*b^3*x^3 - 15*a*b^
2*x^2 - 18*a^3*log(b*x + a)^2 + 66*a^2*b*x - 66*a^3*log(b*x + a))*n^2/b^3
```

Fricas [A] time = 2.01129, size = 397, normalized size = 2.12

$$\frac{4b^3n^2x^3+18b^3x^3\log(c)^2-15ab^2n^2x^2+66a^2bn^2x+18\left(b^3n^2x^3+a^3n^2\right)\log(bx+a)^2-6\left(2b^3n^2x^3-3ab^2n^2x^2+6\right.}{54b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="fricas")
```

```
[Out] 1/54*(4*b^3*n^2*x^3 + 18*b^3*x^3*log(c)^2 - 15*a*b^2*n^2*x^2 + 66*a^2*b*n^2
*x + 18*(b^3*n^2*x^3 + a^3*n^2)*log(b*x + a)^2 - 6*(2*b^3*n^2*x^3 - 3*a*b^2
*n^2*x^2 + 6*a^2*b*n^2*x + 11*a^3*n^2 - 6*(b^3*n*x^3 + a^3*n)*log(c))*log(b
*x + a) - 6*(2*b^3*n*x^3 - 3*a*b^2*n*x^2 + 6*a^2*b*n*x)*log(c))/b^3
```

Sympy [A] time = 3.73593, size = 260, normalized size = 1.39

$$\begin{cases} \frac{a^3n^2\log(a+bx)^2}{3b^3} - \frac{11a^3n^2\log(a+bx)}{9b^3} + \frac{2a^3n\log(c)\log(a+bx)}{3b^3} - \frac{2a^2n^2x\log(a+bx)}{3b^2} + \frac{11a^2n^2x}{9b^2} - \frac{2a^2nx\log(c)}{3b^2} + \frac{an^2x^2\log(a+bx)}{3b} - \frac{5an^2x^2}{18b} + \frac{anx \\ \frac{x^3\log(a^nc)^2}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(c*(b*x+a)**n)**2,x)
```

```
[Out] Piecewise((a**3*n**2*log(a + b*x)**2/(3*b**3) - 11*a**3*n**2*log(a + b*x)/(
9*b**3) + 2*a**3*n*log(c)*log(a + b*x)/(3*b**3) - 2*a**2*n**2*x*log(a + b*x
)/(3*b**2) + 11*a**2*n**2*x/(9*b**2) - 2*a**2*n*x*log(c)/(3*b**2) + a*n**2*
x**2*log(a + b*x)/(3*b) - 5*a*n**2*x**2/(18*b) + a*n*x**2*log(c)/(3*b) + n*
*2*x**3*log(a + b*x)**2/3 - 2*n**2*x**3*log(a + b*x)/9 + 2*n**2*x**3/27 + 2
*n*x**3*log(c)*log(a + b*x)/3 - 2*n*x**3*log(c)/9 + x**3*log(c)**2/3, Ne(b,
 0)), (x**3*log(a**n*c)**2/3, True))
```

Giac [A] time = 1.18996, size = 462, normalized size = 2.47

$$\frac{(bx+a)^3n^2\log(bx+a)^2}{3\,b^3} - \frac{(bx+a)^2an^2\log(bx+a)^2}{b^3} + \frac{(bx+a)a^2n^2\log(bx+a)^2}{b^3} - \frac{2\,(bx+a)^3n^2\log(bx+a)}{9\,b^3} + \frac{(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^2,x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*n^2*log(b*x + a)^2/b^3 - (b*x + a)^2*a*n^2*log(b*x + a)^2/b
^3 + (b*x + a)*a^2*n^2*log(b*x + a)^2/b^3 - 2/9*(b*x + a)^3*n^2*log(b*x + a
)/b^3 + (b*x + a)^2*a*n^2*log(b*x + a)/b^3 - 2*(b*x + a)*a^2*n^2*log(b*x +
a)/b^3 + 2/3*(b*x + a)^3*n*log(b*x + a)*log(c)/b^3 - 2*(b*x + a)^2*a*n*log(
b*x + a)*log(c)/b^3 + 2*(b*x + a)*a^2*n*log(b*x + a)*log(c)/b^3 + 2/27*(b*x
 + a)^3*n^2/b^3 - 1/2*(b*x + a)^2*a*n^2/b^3 + 2*(b*x + a)*a^2*n^2/b^3 - 2/9
*(b*x + a)^3*n*log(c)/b^3 + (b*x + a)^2*a*n*log(c)/b^3 - 2*(b*x + a)*a^2*n*
log(c)/b^3 + 1/3*(b*x + a)^3*log(c)^2/b^3 - (b*x + a)^2*a*log(c)^2/b^3 + (b
*x + a)*a^2*log(c)^2/b^3
```

3.86 $\int \frac{\log^2(c(a+bx)^n)}{x^4} dx$

Optimal. Leaf size=177

$$-\frac{2b^3n^2\text{PolyLog}\left(2,\frac{a}{a+bx}\right)}{3a^3}+\frac{2b^3n\log\left(1-\frac{a}{a+bx}\right)\log\left(c(a+bx)^n\right)}{3a^3}+\frac{2b^2n(a+bx)\log\left(c(a+bx)^n\right)}{3a^3x}-\frac{b^2n^2}{3a^2x}-\frac{b^3n^2\log(x}{a^3}$$

```
[Out] -(b^2*n^2)/(3*a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/(3*a^3
) - (b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*(a + b*x)*Log[c*(a + b*x)
^n])/(3*a^3*x) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n*Log[c*(a + b*x)^n]
*Log[1 - a/(a + b*x)])/(3*a^3) - (2*b^3*n^2*PolyLog[2, a/(a + b*x)])/(3*a^3
)
```

Rubi [A] time = 0.306162, antiderivative size = 193, normalized size of antiderivative = 1.09, number of steps used = 13, number of rules used = 11, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.688, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$\frac{2b^3n^2\text{PolyLog}\left(2,\frac{bx}{a}+1\right)}{3a^3}-\frac{b^3\log^2\left(c(a+bx)^n\right)}{3a^3}+\frac{2b^3n\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{3a^3}+\frac{2b^2n(a+bx)\log\left(c(a+bx)^n\right)}{3a^3x}-$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/x^4,x]
```

```
[Out] -(b^2*n^2)/(3*a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/(3*a^3
) - (b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*(a + b*x)*Log[c*(a + b*x)
^n])/(3*a^3*x) + (2*b^3*n*Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/(3*a^3) - (b^
3*Log[c*(a + b*x)^n]^2)/(3*a^3) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n^2
*PolyLog[2, 1 + (b*x)/a])/(3*a^3)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{x^4}\,dx = -\frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{1}{3}(2bn)\int \frac{\log(c(a+bx)^n)}{x^3(a+bx)}\,dx$$

$$= -\frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{1}{3}(2n)\,\text{Subst}\left(\int \frac{\log(cx^n)}{x\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)$$

$$= -\frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{(2n)\,\text{Subst}\left(\int \frac{\log(cx^n)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}\,dx, x, a+bx\right)}{3a} - \frac{(2bn)\,\text{Subst}\left(\int \frac{\log(cx^n)}{x\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x,\right.}{3a}$$

$$= -\frac{bn\log(c(a+bx)^n)}{3ax^2} - \frac{\log^2(c(a+bx)^n)}{3x^3} - \frac{(2bn)\,\text{Subst}\left(\int \frac{\log(cx^n)}{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}\,dx, x, a+bx\right)}{3a^2} + \frac{(2b^2n)\,\text{S}}{}$$

$$= -\frac{bn\log(c(a+bx)^n)}{3ax^2} + \frac{2b^2n(a+bx)\log(c(a+bx)^n)}{3a^3x} - \frac{\log^2(c(a+bx)^n)}{3x^3} + \frac{(2b^2n)\,\text{Subst}\left(\int\right.}{}$$

$$= -\frac{b^2n^2}{3a^2x} - \frac{b^3n^2\log(x)}{a^3} + \frac{b^3n^2\log(a+bx)}{3a^3} - \frac{bn\log(c(a+bx)^n)}{3ax^2} + \frac{2b^2n(a+bx)\log(c(a+bx}{3a^3x}$$

$$= -\frac{b^2n^2}{3a^2x} - \frac{b^3n^2\log(x)}{a^3} + \frac{b^3n^2\log(a+bx)}{3a^3} - \frac{bn\log(c(a+bx)^n)}{3ax^2} + \frac{2b^2n(a+bx)\log(c(a+bx}{3a^3x}$$

Mathematica [A] time = 0.0566782, size = 186, normalized size = 1.05

$$\frac{2b^3n^2\text{PolyLog}\left(2,\frac{a+bx}{a}\right)}{3a^3} - \frac{b^3\log^2(c(a+bx)^n)}{3a^3} + \frac{2b^3n\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{3a^3} + \frac{2b^2n\log(c(a+bx)^n)}{3a^2x} - \frac{b^2n^2}{3a^2x} - \frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/x^4,x]
```

```
[Out] -(b^2*n^2)/(3*a^2*x) - (b^3*n^2*Log[x])/a^3 + (b^3*n^2*Log[a + b*x])/a^3 -
(b*n*Log[c*(a + b*x)^n])/(3*a*x^2) + (2*b^2*n*Log[c*(a + b*x)^n])/(3*a^2*x)
 + (2*b^3*n*Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/(3*a^3) - (b^3*Log[c*(a + b
*x)^n]^2)/(3*a^3) - Log[c*(a + b*x)^n]^2/(3*x^3) + (2*b^3*n^2*PolyLog[2, (a
 + b*x)/a])/(3*a^3)
```

Maple [C] time = 0.546, size = 1102, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/x^4,x)
```

```
[Out] -2/3*b^3*n^2/a^3*dilog(1/a*(b*x+a))+1/3*b^3*n^2/a^3*ln(b*x+a)^2+1/3*I*b^3*n
/a^3*ln(b*x+a)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+2/3*b^2*n
/a^2/x*ln(c)+2/3*b^3*n/a^3*ln(x)*ln(c)-2/3*b^3*n/a^3*ln(b*x+a)*ln(c)-2/3*b^
3*n^2/a^3*ln(x)*ln(1/a*(b*x+a))-1/3*b*n/a/x^2*ln(c)-1/3*I/x^3*ln((b*x+a)^n)
*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I/x^3*ln((b*x+a)^n)*Pi*csgn(I*c*(b*
x+a)^n)^3+1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)^n)^3-1/3*I*b^3*n/a^3*ln(x)*Pi
*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+1/6*I*b*n/a/x^2*Pi*csgn(I*
(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+1/3*I/x^3*ln((b*x+a)^n)*Pi*csgn(I*
```

```
(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+2/3*b^2*n*ln((b*x+a)^n)/a^2/x-1/3*
I*b^2*n/a^2/x*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/3*I/x^3*
ln((b*x+a)^n)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-2/3*b^3*n*ln((b*x+
a)^n)/a^3*ln(b*x+a)-1/3*b*n*ln((b*x+a)^n)/a/x^2+2/3*b^3*n*ln((b*x+a)^n)/a^3
*ln(x)-1/6*I*b*n/a/x^2*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*b^3*n/a^3*l
n(x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-1/3*I*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I
*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*b^2*n/a^2/x*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(
b*x+a)^n)^2+1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^
2-1/6*I*b*n/a/x^2*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/3*I*b^3*n/a^
3*ln(b*x+a)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+1/3*I*b^2*n/a^2/x*Pi
*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/3*I*b^3*n/a^3*ln(b*x+a)*Pi*csgn(I*c*(b*x
+a)^n)^3-1/3*I*b^3*n/a^3*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^3-2/3/x^3*ln((b*x+a)^
n)*ln(c)-1/12*(I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-I*Pi*csgn(I*(b*
x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-I*Pi*csgn(I*c*(b*x+a)^n)^3+I*Pi*csgn(
I*c*(b*x+a)^n)^2*csgn(I*c)+2*ln(c))^2/x^3-1/3/x^3*ln((b*x+a)^n)^2-1/3*I*b^2
*n/a^2/x*Pi*csgn(I*c*(b*x+a)^n)^3-1/3*b^2*n^2/x/a^2-b^3*n^2*ln(x)/a^3+b^3*n
^2*ln(b*x+a)/a^3
```

Maxima [A] time = 1.2232, size = 203, normalized size = 1.15

$$-\frac{1}{3}b^2n^2\left(\frac{2\left(\log\left(\frac{bx}{a}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{bx}{a}\right)\right)b}{a^3}-\frac{3b\log(bx+a)}{a^3}-\frac{bx\log(bx+a)^2-3bx\log(x)-a}{a^3x}\right)-\frac{1}{3}bn\left(\frac{2b^2\log(b\right.}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/x^4,x, algorithm="maxima")
```

```
[Out] -1/3*b^2*n^2*(2*(log(b*x/a + 1)*log(x) + dilog(-b*x/a))*b/a^3 - 3*b*log(b*x
 + a)/a^3 - (b*x*log(b*x + a)^2 - 3*b*x*log(x) - a)/(a^3*x)) - 1/3*b*n*(2*b
^2*log(b*x + a)/a^3 - 2*b^2*log(x)/a^3 - (2*b*x - a)/(a^2*x^2))*log((b*x +
a)^n*c) - 1/3*log((b*x + a)^n*c)^2/x^3
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log\left((bx+a)^nc\right)^2}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/x^4,x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/x^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log\left(c(a+bx)^n\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/x**4,x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/x**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/x^4,x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/x^4, x)
```

3.87 $\int x^2 \log^3(c(a+bx)^n)\,dx$

Optimal. Leaf size=285

$$\frac{6a^2n^2(a+bx)\log(c(a+bx)^n)}{b^3}-\frac{3a^2n(a+bx)\log^2(c(a+bx)^n)}{b^3}+\frac{a^2(a+bx)\log^3(c(a+bx)^n)}{b^3}-\frac{6a^2n^3x}{b^2}+\frac{2n^2(a+bx)^3\log(c(a+bx)^n)}{9b^3}$$

```
[Out] (-6*a^2*n^3*x)/b^2 + (3*a*n^3*(a + b*x)^2)/(4*b^3) - (2*n^3*(a + b*x)^3)/(2
7*b^3) + (6*a^2*n^2*(a + b*x)*Log[c*(a + b*x)^n])/b^3 - (3*a*n^2*(a + b*x)^
2*Log[c*(a + b*x)^n])/(2*b^3) + (2*n^2*(a + b*x)^3*Log[c*(a + b*x)^n])/(9*b
^3) - (3*a^2*n*(a + b*x)*Log[c*(a + b*x)^n]^2)/b^3 + (3*a*n*(a + b*x)^2*Log
[c*(a + b*x)^n]^2)/(2*b^3) - (n*(a + b*x)^3*Log[c*(a + b*x)^n]^2)/(3*b^3) +
 (a^2*(a + b*x)*Log[c*(a + b*x)^n]^3)/b^3 - (a*(a + b*x)^2*Log[c*(a + b*x)^
n]^3)/b^3 + ((a + b*x)^3*Log[c*(a + b*x)^n]^3)/(3*b^3)
```

Rubi [A] time = 0.223719, antiderivative size = 285, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304}

$$\frac{6a^2n^2(a+bx)\log(c(a+bx)^n)}{b^3}-\frac{3a^2n(a+bx)\log^2(c(a+bx)^n)}{b^3}+\frac{a^2(a+bx)\log^3(c(a+bx)^n)}{b^3}-\frac{6a^2n^3x}{b^2}+\frac{2n^2(a+bx)^3\log(c(a+bx)^n)}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[c*(a + b*x)^n]^3,x]
```


```
[Out] (-6*a^2*n^3*x)/b^2 + (3*a*n^3*(a + b*x)^2)/(4*b^3) - (2*n^3*(a + b*x)^3)/(2
7*b^3) + (6*a^2*n^2*(a + b*x)*Log[c*(a + b*x)^n])/b^3 - (3*a*n^2*(a + b*x)^
2*Log[c*(a + b*x)^n])/(2*b^3) + (2*n^2*(a + b*x)^3*Log[c*(a + b*x)^n])/(9*b
^3) - (3*a^2*n*(a + b*x)*Log[c*(a + b*x)^n]^2)/b^3 + (3*a*n*(a + b*x)^2*Log
[c*(a + b*x)^n]^2)/(2*b^3) - (n*(a + b*x)^3*Log[c*(a + b*x)^n]^2)/(3*b^3) +
 (a^2*(a + b*x)*Log[c*(a + b*x)^n]^3)/b^3 - (a*(a + b*x)^2*Log[c*(a + b*x)^
n]^3)/b^3 + ((a + b*x)^3*Log[c*(a + b*x)^n]^3)/(3*b^3)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int x^2 \log^3\left(c(a+bx)^n\right) dx &= \int \left(\frac{a^2 \log^3\left(c(a+bx)^n\right)}{b^2} - \frac{2a(a+bx)\log^3\left(c(a+bx)^n\right)}{b^2} + \frac{(a+bx)^2\log^3\left(c(a+bx)^n\right)}{b^2}\right) dx \\
&= \frac{\int (a+bx)^2 \log^3\left(c(a+bx)^n\right) dx}{b^2} - \frac{(2a)\int (a+bx)\log^3\left(c(a+bx)^n\right) dx}{b^2} + \frac{a^2\int \log^3\left(c(a+b\right.}{b^2} \\
&= \frac{\text{Subst}\left(\int x^2\log^3\left(cx^n\right) dx, x, a+bx\right)}{b^3} - \frac{(2a)\,\text{Subst}\left(\int x\log^3\left(cx^n\right) dx, x, a+bx\right)}{b^3} + \frac{a^2\,\text{Sul}}{} \\
&= \frac{a^2(a+bx)\log^3\left(c(a+bx)^n\right)}{b^3} - \frac{a(a+bx)^2\log^3\left(c(a+bx)^n\right)}{b^3} + \frac{(a+bx)^3\log^3\left(c(a+bx)^n\right)}{3b^3} - \\
&= -\frac{3a^2n(a+bx)\log^2\left(c(a+bx)^n\right)}{b^3} + \frac{3an(a+bx)^2\log^2\left(c(a+bx)^n\right)}{2b^3} - \frac{n(a+bx)^3\log^2\left(c(a+\right.}{3b^3} \\
&= -\frac{6a^2n^3x}{b^2} + \frac{3an^3(a+bx)^2}{4b^3} - \frac{2n^3(a+bx)^3}{27b^3} + \frac{6a^2n^2(a+bx)\log\left(c(a+bx)^n\right)}{b^3} - \frac{3an^2(a+b}{}
\end{aligned}$$

Mathematica [A] time = 0.0715175, size = 260, normalized size = 0.91

$$\frac{85a^3n^2\log\left(c(a+bx)^n\right)}{18b^3} + \frac{11a^2n^2x\log\left(c(a+bx)^n\right)}{3b^2} + \frac{a^3\log^3\left(c(a+bx)^n\right)}{3b^3} - \frac{11a^3n\log^2\left(c(a+bx)^n\right)}{6b^3} - \frac{a^2nx\log^2\left(c(a+\right.}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[c*(a + b*x)^n]^3,x]
```

```
[Out] (-85*a^2*n^3*x)/(18*b^2) + (19*a*n^3*x^2)/(36*b) - (2*n^3*x^3)/27 + (85*a^3
*n^2*Log[c*(a + b*x)^n])/(18*b^3) + (11*a^2*n^2*x*Log[c*(a + b*x)^n])/(3*b^
2) - (5*a*n^2*x^2*Log[c*(a + b*x)^n])/(6*b) + (2*n^2*x^3*Log[c*(a + b*x)^n]
)/9 - (11*a^3*n*Log[c*(a + b*x)^n]^2)/(6*b^3) - (a^2*n*x*Log[c*(a + b*x)^n]
^2)/b^2 + (a*n*x^2*Log[c*(a + b*x)^n]^2)/(2*b) - (n*x^3*Log[c*(a + b*x)^n]^
2)/3 + (a^3*Log[c*(a + b*x)^n]^3)/(3*b^3) + (x^3*Log[c*(a + b*x)^n]^3)/3
```

Maple [C] time = 0.744, size = 5345, normalized size = 18.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(c*(b*x+a)^n)^3,x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.48307, size = 290, normalized size = 1.02

$$\frac{1}{3}x^3\log\left((bx+a)^n c\right)^3+\frac{1}{6}bn\left(\frac{6a^3\log(bx+a)}{b^4}-\frac{2b^2x^3-3abx^2+6a^2x}{b^3}\right)\log\left((bx+a)^n c\right)^2-\frac{1}{108}bn\left(\frac{\left(8b^3x^3-36a^3\log\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="maxima")
```

```
[Out] 1/3*x^3*log((b*x + a)^n*c)^3 + 1/6*b*n*(6*a^3*log(b*x + a)/b^4 - (2*b^2*x^3
 - 3*a*b*x^2 + 6*a^2*x)/b^3)*log((b*x + a)^n*c)^2 - 1/108*b*n*((8*b^3*x^3 -
 36*a^3*log(b*x + a)^3 - 57*a*b^2*x^2 - 198*a^3*log(b*x + a)^2 + 510*a^2*b*
x - 510*a^3*log(b*x + a))*n^2/b^4 - 6*(4*b^3*x^3 - 15*a*b^2*x^2 - 18*a^3*lo
g(b*x + a)^2 + 66*a^2*b*x - 66*a^3*log(b*x + a))*n*log((b*x + a)^n*c)/b^4)
```

Fricas [A] time = 2.08624, size = 756, normalized size = 2.65

$$-\frac{8b^3n^3x^3-36b^3x^3\log(c)^3-57ab^2n^3x^2+510a^2bn^3x-36\left(b^3n^3x^3+a^3n^3\right)\log(bx+a)^3+18\left(2b^3n^3x^3-3ab^2n^3x^2+\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="fricas")
```

```
[Out] -1/108*(8*b^3*n^3*x^3 - 36*b^3*x^3*log(c)^3 - 57*a*b^2*n^3*x^2 + 510*a^2*b*
n^3*x - 36*(b^3*n^3*x^3 + a^3*n^3)*log(b*x + a)^3 + 18*(2*b^3*n^3*x^3 - 3*a
*b^2*n^3*x^2 + 6*a^2*b*n^3*x + 11*a^3*n^3 - 6*(b^3*n^2*x^3 + a^3*n^2)*log(c
))*log(b*x + a)^2 + 18*(2*b^3*n*x^3 - 3*a*b^2*n*x^2 + 6*a^2*b*n*x)*log(c)^2
 - 6*(4*b^3*n^3*x^3 - 15*a*b^2*n^3*x^2 + 66*a^2*b*n^3*x + 85*a^3*n^3 + 18*(
b^3*n*x^3 + a^3*n)*log(c)^2 - 6*(2*b^3*n^2*x^3 - 3*a*b^2*n^2*x^2 + 6*a^2*b*
n^2*x + 11*a^3*n^2)*log(c))*log(b*x + a) - 6*(4*b^3*n^2*x^3 - 15*a*b^2*n^2*
x^2 + 66*a^2*b*n^2*x)*log(c))/b^3
```

Sympy [A] time = 7.31348, size = 517, normalized size = 1.81

$$\begin{cases}\frac{a^3n^3\log(a+bx)^3}{3b^3}-\frac{11a^3n^3\log(a+bx)^2}{6b^3}+\frac{85a^3n^3\log(a+bx)}{18b^3}+\frac{a^3n^2\log(c)\log(a+bx)^2}{b^3}-\frac{11a^3n^2\log(c)\log(a+bx)}{3b^3}+\frac{a^3n\log(c)^2\log(a+bx)}{b^3}-\frac{a^2n^3x\,\mathrm{lo}\cdots}{} \\ \frac{x^3\log(a^nc)^3}{3}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(c*(b*x+a)**n)**3,x)
```

```
[Out] Piecewise((a**3*n**3*log(a + b*x)**3/(3*b**3) - 11*a**3*n**3*log(a + b*x)**
2/(6*b**3) + 85*a**3*n**3*log(a + b*x)/(18*b**3) + a**3*n**2*log(c)*log(a +
```

```
 b*x)**2/b**3 - 11*a**3*n**2*log(c)*log(a + b*x)/(3*b**3) + a**3*n*log(c)**
2*log(a + b*x)/b**3 - a**2*n**3*x*log(a + b*x)**2/b**2 + 11*a**2*n**3*x*log
(a + b*x)/(3*b**2) - 85*a**2*n**3*x/(18*b**2) - 2*a**2*n**2*x*log(c)*log(a
+ b*x)/b**2 + 11*a**2*n**2*x*log(c)/(3*b**2) - a**2*n*x*log(c)**2/b**2 + a*
n**3*x**2*log(a + b*x)**2/(2*b) - 5*a*n**3*x**2*log(a + b*x)/(6*b) + 19*a*n
**3*x**2/(36*b) + a*n**2*x**2*log(c)*log(a + b*x)/b - 5*a*n**2*x**2*log(c)/
(6*b) + a*n*x**2*log(c)**2/(2*b) + n**3*x**3*log(a + b*x)**3/3 - n**3*x**3*
log(a + b*x)**2/3 + 2*n**3*x**3*log(a + b*x)/9 - 2*n**3*x**3/27 + n**2*x**3
*log(c)*log(a + b*x)**2 - 2*n**2*x**3*log(c)*log(a + b*x)/3 + 2*n**2*x**3*l
og(c)/9 + n*x**3*log(c)**2*log(a + b*x) - n*x**3*log(c)**2/3 + x**3*log(c)*
*3/3, Ne(b, 0)), (x**3*log(a**n*c)**3/3, True))
```

Giac [B] time = 1.2271, size = 845, normalized size = 2.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(c*(b*x+a)^n)^3,x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*n^3*log(b*x + a)^3/b^3 - (b*x + a)^2*a*n^3*log(b*x + a)^3/b
^3 + (b*x + a)*a^2*n^3*log(b*x + a)^3/b^3 - 1/3*(b*x + a)^3*n^3*log(b*x + a
)^2/b^3 + 3/2*(b*x + a)^2*a*n^3*log(b*x + a)^2/b^3 - 3*(b*x + a)*a^2*n^3*lo
g(b*x + a)^2/b^3 + (b*x + a)^3*n^2*log(b*x + a)^2*log(c)/b^3 - 3*(b*x + a)^
2*a*n^2*log(b*x + a)^2*log(c)/b^3 + 3*(b*x + a)*a^2*n^2*log(b*x + a)^2*log(
c)/b^3 + 2/9*(b*x + a)^3*n^3*log(b*x + a)/b^3 - 3/2*(b*x + a)^2*a*n^3*log(b
*x + a)/b^3 + 6*(b*x + a)*a^2*n^3*log(b*x + a)/b^3 - 2/3*(b*x + a)^3*n^2*lo
g(b*x + a)*log(c)/b^3 + 3*(b*x + a)^2*a*n^2*log(b*x + a)*log(c)/b^3 - 6*(b*
x + a)*a^2*n^2*log(b*x + a)*log(c)/b^3 + (b*x + a)^3*n*log(b*x + a)*log(c)^
2/b^3 - 3*(b*x + a)^2*a*n*log(b*x + a)*log(c)^2/b^3 + 3*(b*x + a)*a^2*n*log
(b*x + a)*log(c)^2/b^3 - 2/27*(b*x + a)^3*n^3/b^3 + 3/4*(b*x + a)^2*a*n^3/b
^3 - 6*(b*x + a)*a^2*n^3/b^3 + 2/9*(b*x + a)^3*n^2*log(c)/b^3 - 3/2*(b*x +
a)^2*a*n^2*log(c)/b^3 + 6*(b*x + a)*a^2*n^2*log(c)/b^3 - 1/3*(b*x + a)^3*n*
log(c)^2/b^3 + 3/2*(b*x + a)^2*a*n*log(c)^2/b^3 - 3*(b*x + a)*a^2*n*log(c)^
2/b^3 + 1/3*(b*x + a)^3*log(c)^3/b^3 - (b*x + a)^2*a*log(c)^3/b^3 + (b*x +
a)*a^2*log(c)^3/b^3
```

3.88 $\int \frac{(f+gx)^3}{a+b\log(c(d+ex)^n)} dx$

Optimal. Leaf size=299

$$\frac{3g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}+\frac{3ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(\ldots}{b\ldots}\right.}{be^4n}$$

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^4*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (3*g*(e*f - d*g)^2*(d + e*x)^
2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((2*a)/(b*n
))*n*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(e*f - d*g)*(d + e*x)^3*ExpIntegralEi[
(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((3*a)/(b*n))*n*(c*(d + e*x
)^n)^(3/n)) + (g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))
/(b*n)])/(b*e^4*E^((4*a)/(b*n))*n*(c*(d + e*x)^n)^(4/n))
```

Rubi [A] time = 0.452357, antiderivative size = 299, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{3g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{be^4n}+\frac{3ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(\ldots}{b\ldots}\right.}{be^4n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^4*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (3*g*(e*f - d*g)^2*(d + e*x)^
2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((2*a)/(b*n
))*n*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(e*f - d*g)*(d + e*x)^3*ExpIntegralEi[
(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^4*E^((3*a)/(b*n))*n*(c*(d + e*x
)^n)^(3/n)) + (g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))
/(b*n)])/(b*e^4*E^((4*a)/(b*n))*n*(c*(d + e*x)^n)^(4/n))
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^3}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^3}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{3g(ef-dg)^2(d+ex)}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)} + \frac{3g^2(ef-dg)(d+ex)^2}{e^3\left(a+b\log\left(c(d+ex)^n\right)\right)}\right.$$

$$= \frac{g^3\int \frac{(d+ex)^3}{a+b\log(c(d+ex)^n)}\,dx}{e^3} + \frac{\left(3g^2(ef-dg)\right)\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{e^3} + \frac{\left(3g(ef-dg)^2\right)\int \frac{d+}{a+b\log(}}{e^3}$$

$$= \frac{g^3\,\text{Subst}\left(\int \frac{x^3}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e^4} + \frac{\left(3g^2(ef-dg)\right)\text{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x, d+ex\right.}{e^4}$$

$$= \frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^4 n} + \frac{\left(3g^2(ef-dg)(d+\right.}{}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^4 n} + \frac{3e^{-\frac{2a}{bn}}g(ef-dg)^2(d+ex)^2}{}$$

Mathematica [A] time = 0.939547, size = 266, normalized size = 0.89

$$e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(e^{\frac{3a}{bn}}(ef-dg)^3\left(c(d+ex)^n\right)^{3/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right) + g(d+ex)\left(3e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((d + e*x)*(E^((3*a)/(b*n))*(e*f - d*g)^3*(c*(d + e*x)^n)^(3/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)] + g*(d + e*x)*(3*E^((2*a)/(b*n))*(e*f
- d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))
/(b*n)] - g*(d + e*x)*(-3*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Ex
pIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - g*(d + e*x)*ExpIntegral
Ei[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)]))))/(b*e^4*E^((4*a)/(b*n))*n*(c*(d
 + e*x)^n)^(4/n))
```

Maple [F] time = 0.63, size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^3}{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 1.99384, size = 726, normalized size = 2.43

$$\frac{\left(g^3 \operatorname{log\_integral}\left(\left(e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4\right)e^{\left(\frac{4\,(b\log(c)+a)}{bn}\right)}\right)+3\left(efg^2-dg^3\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(e^3x^3\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] (g^3*log_integral((e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)
*e^(4*(b*log(c) + a)/(b*n))) + 3*(e*f*g^2 - d*g^3)*e^((b*log(c) + a)/(b*n))
*log_integral((e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*e^(3*(b*log(c) + a)
/(b*n))) + 3*(e^2*f^2*g - 2*d*e*f*g^2 + d^2*g^3)*e^(2*(b*log(c) + a)/(b*n))
*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*log(c) + a)/(b*n))) + (e^3*
f^3 - 3*d*e^2*f^2*g + 3*d^2*e*f*g^2 - d^3*g^3)*e^(3*(b*log(c) + a)/(b*n))*l
og_integral((e*x + d)*e^((b*log(c) + a)/(b*n))))*e^(-4*(b*log(c) + a)/(b*n)
)/(b*e^4*n)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^3}{a+b\log\left(c\,(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A] time = 1.34008, size = 786, normalized size = 2.63

$$-\frac{d^3g^3\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-4\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{3\,d^2fg^2\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log\left(xe+d\right)\right)e^{\left(-\frac{a}{bn}-3\right)}}{bc^{\left(\frac{1}{n}\right)}n}+\frac{3\,d^2g^3\mathrm{Ei}\left(\frac{2\log(c)}{n}+\frac{2a}{bn}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] -d^3*g^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 4)/(b*c^(1/n)*
n) + 3*d^2*f*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 3)/(b*
c^(1/n)*n) + 3*d^2*g^3*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/
(b*n) - 4)/(b*c^(2/n)*n) - 3*d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*
e^(-a/(b*n) - 2)/(b*c^(1/n)*n) - 6*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*lo
g(x*e + d))*e^(-2*a/(b*n) - 3)/(b*c^(2/n)*n) - 3*d*g^3*Ei(3*log(c)/n + 3*a/
(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) - 4)/(b*c^(3/n)*n) + f^3*Ei(log(c)/n
+ a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n) + 3*f^2*g*Ei(2*log
(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) - 2)/(b*c^(2/n)*n) + 3*f*
g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) - 3)/(b*c^(3/
n)*n) + g^3*Ei(4*log(c)/n + 4*a/(b*n) + 4*log(x*e + d))*e^(-4*a/(b*n) - 4)/
(b*c^(4/n)*n)
```

3.89 $\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=219

$$\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^3n}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3n}$$

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^3*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (2*g*(e*f - d*g)*(d + e*x)^2*
ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^3*E^((2*a)/(b*n))
*n*(c*(d + e*x)^n)^(2/n)) + (g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```

Rubi [A] time = 0.293258, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^3n}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n]),x]
```


```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b*e^3*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (2*g*(e*f - d*g)*(d + e*x)^2*
ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^3*E^((2*a)/(b*n))
*n*(c*(d + e*x)^n)^(2/n)) + (g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```


Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^2}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^2}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{2g(ef-dg)(d+ex)}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{g^2(d+ex)^2}{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)}\right)$$

$$=\frac{g^2\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{e^2}+\frac{(2g(ef-dg))\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{e^2}+\frac{(ef-dg)^2\int \frac{1}{a+b\log(c(d+ex)^n)}}{e^2}$$

$$=\frac{g^2\,\mathrm{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\,\mathrm{Subst}\left(\int \frac{x}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^3}$$

$$=\frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{a+bx}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{e^3n}+\frac{\left(2g(ef-dg)(d+\right.}{}$$

$$=\frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^3n}+\frac{2e^{-\frac{2a}{bn}}g(ef-dg)(d+ex)^2\,(}{}$$

Mathematica [A] time = 0.401409, size = 197, normalized size = 0.9

$$\frac{e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-g(d+ex)\left(-2e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)\right.\right.}{be^3n}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((d + e*x)*(E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)] - g*(d + e*x)*(-2*E^(a/(b*n))*(e*f - d
*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*
n)] - g*(d + e*x)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])))/(b
*e^3*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n))
```

Maple [F] time = 0.612, size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^2}{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 2.08685, size = 473, normalized size = 2.16

$$\frac{\left(g^2\,\mathrm{log\_integral}\left(\left(e^3x^3+3\,de^2x^2+3\,d^2ex+d^3\right)e^{\left(\frac{3\,(b\log(c)+a)}{bn}\right)}\right)+2\left(efg-dg^2\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\mathrm{log\_integral}\left(\left(e^2x^2+2\,dex+d^2\right.\right.}{be^3n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] (g^2*log_integral((e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*e^(3*(b*log(c)
+ a)/(b*n))) + 2*(e*f*g - d*g^2)*e^((b*log(c) + a)/(b*n))*log_integral((e^2
*x^2 + 2*d*e*x + d^2)*e^(2*(b*log(c) + a)/(b*n))) + (e^2*f^2 - 2*d*e*f*g +
d^2*g^2)*e^(2*(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a
)/(b*n))))*e^(-3*(b*log(c) + a)/(b*n))/(b*e^3*n)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^2}{a+b\log\left(c\,(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A] time = 1.39778, size = 455, normalized size = 2.08

$$\frac{d^2g^2\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-3\right)}}{bc^{\left(\frac{1}{n}\right)}n}-\frac{2\,dfg\mathrm{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}-2\right)}}{bc^{\left(\frac{1}{n}\right)}n}-\frac{2\,dg^2\mathrm{Ei}\left(\frac{2\log(c)}{n}+\frac{2a}{bn}+2\log\right.}{bc^{\frac{2}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] d^2*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 3)/(b*c^(1/n)*n
) - 2*d*f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 2)/(b*c^(1/
n)*n) - 2*d*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) -
 3)/(b*c^(2/n)*n) + f^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) -
 1)/(b*c^(1/n)*n) + 2*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2
*a/(b*n) - 2)/(b*c^(2/n)*n) + g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d
))*e^(-3*a/(b*n) - 3)/(b*c^(3/n)*n)
```

3.90 $\int \frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=139

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^2n}$$

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*
e^2*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (g*(d + e*x)^2*ExpIntegralEi[(2
*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^
n)^(2/n))
```

Rubi [A] time = 0.161926, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{be^2n}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*
e^2*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)) + (g*(d + e*x)^2*ExpIntegralEi[(2
*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^
n)^(2/n))
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{f+gx}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{ef-dg}{e\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{g(d+ex)}{e\left(a+b\log\left(c(d+ex)^n\right)\right)}\right)dx$$

$$=\frac{g\int \frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{e}+\frac{(ef-dg)\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx}{e}$$

$$=\frac{g\,\mathrm{Subst}\left(\int \frac{x}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{e^2}$$

$$=\frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{2x}{n}}}{a+bx}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{e^2n}+\frac{\left((ef-dg)(d+ex)\right.}{}$$

$$=\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{be^2n}+\frac{e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)^{-}}{be^2}$$

Mathematica [A] time = 0.162296, size = 126, normalized size = 0.91

$$\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)+g(d+ex)\mathrm{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)\right)}{be^2n}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((d + e*x)*(E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(a
 + b*Log[c*(d + e*x)^n])/(b*n)] + g*(d + e*x)*ExpIntegralEi[(2*(a + b*Log[c
*(d + e*x)^n]))/(b*n)]))/(b*e^2*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n))
```

Maple [F] time = 0.407, size = 0, normalized size = 0.

$$\int \frac{gx+f}{a+b\ln\left(c\left(ex+d\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx + f}{b\log\left((ex + d)^n c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 2.02464, size = 267, normalized size = 1.92

$$\frac{\left((ef - dg)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left((ex + d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right) + g\operatorname{log\_integral}\left((e^2x^2 + 2\,dex + d^2)e^{\left(\frac{2\,(b\log(c)+a)}{bn}\right)}\right)\right)e^{\left(-\frac{2\,(b\log(c)+a)}{bn}\right)}}{be^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] ((e*f - d*g)*e^((b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) +
 a)/(b*n))) + g*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*log(c) + a)/
(b*n))))*e^(-2*(b*log(c) + a)/(b*n))/(b*e^2*n)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f + gx}{a + b\log\left(c\,(d + ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A] time = 1.30581, size = 215, normalized size = 1.55

$$-\frac{dg\operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{bn} + \log(xe + d)\right)e^{\left(-\frac{a}{bn}-2\right)}}{bc^{\left(\frac{1}{n}\right)}n} + \frac{f\operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{bn} + \log(xe + d)\right)e^{\left(-\frac{a}{bn}-1\right)}}{bc^{\left(\frac{1}{n}\right)}n} + \frac{g\operatorname{Ei}\left(\frac{2\,\log(c)}{n} + \frac{2\,a}{bn} + 2\,\log(xe + d\right.}{bc^{\frac{2}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] -d*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 2)/(b*c^(1/n)*n) +
 f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n) + g
*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) - 2)/(b*c^(2/n)*
n)
```

3.91 $\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=63

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rubi [A] time = 0.0463784, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*n)
)*n*(c*(d + e*x)^n)^n^(-1))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rubi steps

$$\begin{aligned}\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{e}\\ &= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\operatorname{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{en}\\ &= \frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{ben}\end{aligned}$$

Mathematica [F] time = 0.0131231, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1),x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(-1), x]
```

Maple [C] time = 0.082, size = 312, normalized size = 5.

$$-\frac{1}{enb}\mathrm{Ei}\left(1,-\ln(ex+d)-\frac{-ib\pi\,\mathrm{csgn}(ic)\,\mathrm{csgn}\left(i(ex+d)^n\right)\mathrm{csgn}\left(ic(ex+d)^n\right)+ib\pi\,\mathrm{csgn}(ic)\left(\mathrm{csgn}\left(ic(ex+d)^n\right)\right)^2+ib\pi\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] -1/b/e/n*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d
)^n)-n*ln(e*x+d))+2*a)/b/n)*exp(1/2*(I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*n*ln(e*x+d)-2*
b*ln(c)-2*b*ln((e*x+d)^n)-2*a)/b/n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 1.92413, size = 113, normalized size = 1.79

$$\frac{e^{\left(-\frac{b\log(c)+a}{bn}\right)}\,\mathrm{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)}{ben}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)))/
(b*e*n)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a + b\log\left(c\left(d + ex\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A] time = 1.27308, size = 66, normalized size = 1.05

$$\frac{\operatorname{Ei}\left(\frac{\log(c)}{n} + \frac{a}{bn} + \log\left(xe + d\right)\right)e^{\left(-\frac{a}{bn} - 1\right)}}{bc^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) - 1)/(b*c^(1/n)*n)
```

3.92 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))} dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi [A] time = 0.0374711, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))} dx = \int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))} dx$$

Mathematica [A] time = 0.196658, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 0.885, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c(ex+d)^n\right)\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{agx+af+(bgx+bf)\log\left((ex+d)^n c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

3.93 $\int \frac{1}{(f+gx)^2(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)^2\,(a+b\log(c(d+ex)^n))},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi [A] time = 0.0354016, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)^2\,(a+b\log(c(d+ex)^n))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\,(a+b\log(c(d+ex)^n))}\,dx=\int \frac{1}{(f+gx)^2\,(a+b\log(c(d+ex)^n))}\,dx$$

Mathematica [A] time = 0.591295, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)^2\,(a+b\log(c(d+ex)^n))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 0.915, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)^2\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^2 \left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 + 2*b*f*g*x + b*f^2)
*log((e*x + d)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^2 \left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)), x)
```

3.94 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=339

$$\frac{9g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\text{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}+\frac{6ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(}{b\right.}}{b^2e^4n^2}$$

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^4*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (6*g*(e*f - d*g)^2*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((2*a
)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(e*f - d*g)*(d + e*x)^3*ExpInt
egralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((3*a)/(b*n))*n^2
*(c*(d + e*x)^n)^(3/n)) + (4*g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n))
- ((d + e*x)*(f + g*x)^3)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rubi [A] time = 0.788404, antiderivative size = 339, normalized size of antiderivative = 1., number of steps used = 26, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{9g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\text{Ei}\left(\frac{3(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^4n^2}+\frac{6ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(}{b\right.}}{b^2e^4n^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] ((e*f - d*g)^3*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^4*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (6*g*(e*f - d*g)^2*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((2*a
)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(e*f - d*g)*(d + e*x)^3*ExpInt
egralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((3*a)/(b*n))*n^2
*(c*(d + e*x)^n)^(3/n)) + (4*g^3*(d + e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*
(d + e*x)^n]))/(b*n)])/(b^2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n))
- ((d + e*x)*(f + g*x)^3)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^2}\,dx = -\frac{(d+ex)(f+gx)^3}{ben\,(a+b\log(c(d+ex)^n))} + \frac{4\int \frac{(f+gx)^3}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(3(ef-dg))\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\,(a+b\log(c(d+ex)^n))} + \frac{4\int \left(\frac{(ef-dg)^3}{e^3(a+b\log(c(d+ex)^n))} + \frac{3g(ef-dg)^2(d+ex)}{e^3(a+b\log(c(d+ex)^n))} + \frac{3g^2(ef-d}{e^3(a+b\log(}\right.}{bn}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\left(4g^3\right)\int \frac{(d+ex)^3}{a+b\log(c(d+ex)^n)}\,dx}{be^3n} - \frac{\left(3g^2(ef-dg)\right)\int \frac{(d+e}{a+b\log(c}}{be^3n}$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\left(4g^3\right)\text{Subst}\left(\int \frac{x^3}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{be^4n} - \left(3g^2(ef-\right.$$

$$= -\frac{(d+ex)(f+gx)^3}{ben\,(a+b\log(c(d+ex)^n))} + \frac{\left(4g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{a+bx}\,dx, x, \text{lo}\right.}{be^4n^2}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^4n^2} + \frac{6e^{-\frac{2a}{bn}}g(ef-dg)^2(d+e}{}$$

Mathematica [B] time = 1.01585, size = 1674, normalized size = 4.94

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (-(b*d*e^3*E^((4*a)/(b*n))*f^3*n*(c*(d + e*x)^n)^(4/n)) - b*e^4*E^((4*a)/(b
*n))*f^3*n*x*(c*(d + e*x)^n)^(4/n) - 3*b*d*e^3*E^((4*a)/(b*n))*f^2*g*n*x*(c
*(d + e*x)^n)^(4/n) - 3*b*e^4*E^((4*a)/(b*n))*f^2*g*n*x^2*(c*(d + e*x)^n)^(
4/n) - 3*b*d*e^3*E^((4*a)/(b*n))*f*g^2*n*x^2*(c*(d + e*x)^n)^(4/n) - 3*b*e^
4*E^((4*a)/(b*n))*f*g^2*n*x^3*(c*(d + e*x)^n)^(4/n) - b*d*e^3*E^((4*a)/(b*n
))*g^3*n*x^3*(c*(d + e*x)^n)^(4/n) - b*e^4*E^((4*a)/(b*n))*g^3*n*x^4*(c*(d
+ e*x)^n)^(4/n) + a*e^3*E^((3*a)/(b*n))*f^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)
*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] - 3*a*d*e^2*E^((3*a)/(b*n)
)*f^2*g*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x
)^n])/(b*n)] + 3*a*d^2*e*E^((3*a)/(b*n))*f*g^2*(d + e*x)*(c*(d + e*x)^n)^(3
/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] - a*d^3*E^((3*a)/(b*n))
*g^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n
])/(b*n)] + 6*a*e^2*E^((2*a)/(b*n))*f^2*g*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)
*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] - 12*a*d*e*E^((2*a)/(b
*n))*f*g^2*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*
(d + e*x)^n]))/(b*n)] + 6*a*d^2*E^((2*a)/(b*n))*g^3*(d + e*x)^2*(c*(d + e*x
)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 9*a*e*E^(a
/(b*n))*f*g^2*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(a + b*Lo
g[c*(d + e*x)^n]))/(b*n)] - 9*a*d*E^(a/(b*n))*g^3*(d + e*x)^3*(c*(d + e*x)^
n)^n^(-1)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 4*a*g^3*(d
+ e*x)^4*ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + b*e^3*E^((3*
a)/(b*n))*f^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d
 + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] - 3*b*d*e^2*E^((3*a)/(b*n))*f^2*g*(d
+ e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)
]*Log[c*(d + e*x)^n] + 3*b*d^2*e*E^((3*a)/(b*n))*f*g^2*(d + e*x)*(c*(d + e*
x)^n)^(3/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)
^n] - b*d^3*E^((3*a)/(b*n))*g^3*(d + e*x)*(c*(d + e*x)^n)^(3/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] + 6*b*e^2*E^((2*a)/
(b*n))*f^2*g*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[
c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] - 12*b*d*e*E^((2*a)/(b*n))*f*g^2
*(d + e*x)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^
n]))/(b*n)]*Log[c*(d + e*x)^n] + 6*b*d^2*E^((2*a)/(b*n))*g^3*(d + e*x)^2*(c
*(d + e*x)^n)^(2/n)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log
[c*(d + e*x)^n] + 9*b*e*E^(a/(b*n))*f*g^2*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1
)*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] -
9*b*d*E^(a/(b*n))*g^3*(d + e*x)^3*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] + 4*b*g^3*(d + e*x)^4*
ExpIntegralEi[(4*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n])/(b^
2*e^4*E^((4*a)/(b*n))*n^2*(c*(d + e*x)^n)^(4/n)*(a + b*Log[c*(d + e*x)^n]))
```

Maple [F] time = 3.807, size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{eg^3x^4 + df^3 + \left(3\,efg^2 + dg^3\right)x^3 + 3\left(ef^2g + dfg^2\right)x^2 + \left(ef^3 + 3\,df^2g\right)x}{b^2en\log\left((ex+d)^n\right) + b^2en\log\left(c\right) + aben} + \int \frac{4\,eg^3x^3 + ef^3 + 3\,df^2g + 3\left(3\,efg^2 + d\right.}{b^2en\log\left((ex+d)^n\right) + b^2en}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*g^3*x^4 + d*f^3 + (3*e*f*g^2 + d*g^3)*x^3 + 3*(e*f^2*g + d*f*g^2)*x^2 +
 (e*f^3 + 3*d*f^2*g)*x)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*
n) + integrate((4*e*g^3*x^3 + e*f^3 + 3*d*f^2*g + 3*(3*e*f*g^2 + d*g^3)*x^2
 + 6*(e*f^2*g + d*f*g^2)*x)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*
b*e*n), x)
```

Fricas [A] time = 2.19106, size = 1562, normalized size = 4.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] (9*(a*e*f*g^2 - a*d*g^3 + (b*e*f*g^2 - b*d*g^3)*n*log(e*x + d) + (b*e*f*g^2
 - b*d*g^3)*log(c))*e^((b*log(c) + a)/(b*n))*log_integral((e^3*x^3 + 3*d*e^
2*x^2 + 3*d^2*e*x + d^3)*e^(3*(b*log(c) + a)/(b*n))) + 6*(a*e^2*f^2*g - 2*a
*d*e*f*g^2 + a*d^2*g^3 + (b*e^2*f^2*g - 2*b*d*e*f*g^2 + b*d^2*g^3)*n*log(e*
x + d) + (b*e^2*f^2*g - 2*b*d*e*f*g^2 + b*d^2*g^3)*log(c))*e^(2*(b*log(c) +
 a)/(b*n))*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*log(c) + a)/(b*n)
)) + (a*e^3*f^3 - 3*a*d*e^2*f^2*g + 3*a*d^2*e*f*g^2 - a*d^3*g^3 + (b*e^3*f^
3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3*g^3)*n*log(e*x + d) + (b*e^3*
f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3*g^3)*log(c))*e^(3*(b*log(c)
 + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))) - (b*e^4*g^3*
n*x^4 + b*d*e^3*f^3*n + (3*b*e^4*f*g^2 + b*d*e^3*g^3)*n*x^3 + 3*(b*e^4*f^2*
g + b*d*e^3*f*g^2)*n*x^2 + (b*e^4*f^3 + 3*b*d*e^3*f^2*g)*n*x)*e^(4*(b*log(c
) + a)/(b*n)) + 4*(b*g^3*n*log(e*x + d) + b*g^3*log(c) + a*g^3)*log_integra
l((e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)*e^(4*(b*log(c)
+ a)/(b*n))))*e^(-4*(b*log(c) + a)/(b*n))/(b^3*e^4*n^3*log(e*x + d) + b^3*e
^4*n^2*log(c) + a*b^2*e^4*n^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(f + gx\right)^3}{\left(a + b\log\left(c\left(d + ex\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [B] time = 1.84836, size = 4691, normalized size = 13.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^4*b*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) +
 a*b^2*n^2*e^10) + 3*(x*e + d)^3*b*d*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) +
 b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) - 3*(x*e + d)^2*b*d^2*g^3*n*e^6/(b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + (x*e + d)*
b*d^3*g^3*n*e^6/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^
2*e^10) - b*d^3*g^3*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 6
)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^
2*e^10)*c^(1/n)) - 3*(x*e + d)^3*b*f*g^2*n*e^7/(b^3*n^3*e^10*log(x*e + d) +
 b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + 6*(x*e + d)^2*b*d*f*g^2*n*e^7/(b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) - 3*(x*e + d
)*b*d^2*f*g^2*n*e^7/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^
2*n^2*e^10) + 3*b*d^2*f*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(
b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) +
a*b^2*n^2*e^10)*c^(1/n)) + 6*b*d^2*g^3*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(
x*e + d))*e^(-2*a/(b*n) + 6)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3
*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - b*d^3*g^3*Ei(log(c)/n + a/(b*
n) + log(x*e + d))*e^(-a/(b*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^
3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) - 3*(x*e + d)^2*b*f^2*g*n*e^8/
(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10) + 3*(x*e
 + d)*b*d*f^2*g*n*e^8/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*
b^2*n^2*e^10) - a*d^3*g^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
 + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c
^(1/n)) - 3*b*d*f^2*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) +
 8)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*
n^2*e^10)*c^(1/n)) - 12*b*d*f*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*
e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - 9*b*d*g^3*n*Ei(3*log(c)/n + 3*a/(b
*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 6)*log(x*e + d)/((b^3*n^3*e^10*log(x*
e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 3*b*d^2*f*g^2*Ei(
log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 7)*log(c)/((b^3*n^3*e^10*l
og(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) + 6*b*d^2*g^3*
Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 6)*log(c)/((b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) - (
x*e + d)*b*f^3*n*e^9/(b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b
^2*n^2*e^10) + 3*a*d^2*f*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10
)*c^(1/n)) + 6*a*d^2*g^3*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*
a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*
e^10)*c^(2/n)) + b*f^3*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
+ 9)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2
*n^2*e^10)*c^(1/n)) + 6*b*f^2*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d
))*e^(-2*a/(b*n) + 8)*log(x*e + d)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(2/n)) + 9*b*f*g^2*n*Ei(3*log(c)/n + 3*a/(b*n
) + 3*log(x*e + d))*e^(-3*a/(b*n) + 7)*log(x*e + d)/((b^3*n^3*e^10*log(x*e
+ d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*b*g^3*n*Ei(4*log(
c)/n + 4*a/(b*n) + 4*log(x*e + d))*e^(-4*a/(b*n) + 6)*log(x*e + d)/((b^3*n^
3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(4/n)) - 3*b*
d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 8)*log(c)/((b^3
*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(1/n)) - 1
2*b*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 7)*
log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e^10)*
```

```
c^(2/n)) - 9*b*d*g^3*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b
*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n
^2*e^10)*c^(3/n)) - 3*a*d*f^2*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a
/(b*n) + 8)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n^2*e
^10)*c^(1/n)) - 12*a*d*f*g^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^
(-2*a/(b*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*
n^2*e^10)*c^(2/n)) - 9*a*d*g^3*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*
e^(-3*a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^
2*n^2*e^10)*c^(3/n)) + b*f^3*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 9)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c) + a*b^2*n
^2*e^10)*c^(1/n)) + 6*b*f^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e
^(-2*a/(b*n) + 8)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*log(c)
+ a*b^2*n^2*e^10)*c^(2/n)) + 9*b*f*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*
e + d))*e^(-3*a/(b*n) + 7)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^1
0*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*b*g^3*Ei(4*log(c)/n + 4*a/(b*n) + 4
*log(x*e + d))*e^(-4*a/(b*n) + 6)*log(c)/((b^3*n^3*e^10*log(x*e + d) + b^3*
n^2*e^10*log(c) + a*b^2*n^2*e^10)*c^(4/n)) + a*f^3*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 9)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10*l
og(c) + a*b^2*n^2*e^10)*c^(1/n)) + 6*a*f^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*
log(x*e + d))*e^(-2*a/(b*n) + 8)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^10
*log(c) + a*b^2*n^2*e^10)*c^(2/n)) + 9*a*f*g^2*Ei(3*log(c)/n + 3*a/(b*n) +
3*log(x*e + d))*e^(-3*a/(b*n) + 7)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(3/n)) + 4*a*g^3*Ei(4*log(c)/n + 4*a/(b*n) +
4*log(x*e + d))*e^(-4*a/(b*n) + 6)/((b^3*n^3*e^10*log(x*e + d) + b^3*n^2*e^
10*log(c) + a*b^2*n^2*e^10)*c^(4/n))
```

3.95 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=259

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^3n^2}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2}$$

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^3*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e*x
)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((2*a)/
(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a
+ b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((3*a)/(b*n))*n^2*(c*(d + e*x)^
n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rubi [A] time = 0.517006, antiderivative size = 259, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^3n^2}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
b^2*e^3*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e*x
)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((2*a)/
(b*n))*n^2*(c*(d + e*x)^n)^(2/n)) + (3*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a
+ b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^3*E^((3*a)/(b*n))*n^2*(c*(d + e*x)^
n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(b*e*n*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^2}\,dx = -\frac{(d+ex)(f+gx)^2}{ben(a+b\log(c(d+ex)^n))} + \frac{3\int \frac{(f+gx)^2}{a+b\log(c(d+ex)^n)}\,dx}{bn} - \frac{(2(ef-dg))\int \frac{f+gx}{a+b\log(c(d+ex)^n)}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben(a+b\log(c(d+ex)^n))} + \frac{3\int \left(\frac{(ef-dg)^2}{e^2(a+b\log(c(d+ex)^n))} + \frac{2g(ef-dg)(d+ex)}{e^2(a+b\log(c(d+ex)^n))} + \frac{g^2(d+}{e^2(a+b\log(}\right.}{bn}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben(a+b\log(c(d+ex)^n))} + \frac{(3g^2)\int \frac{(d+ex)^2}{a+b\log(c(d+ex)^n)}\,dx}{be^2n} - \frac{(2g(ef-dg))\int \frac{d+ex}{a+b\log(c(d}}{be^2n}$$

$$= -\frac{(d+ex)(f+gx)^2}{ben(a+b\log(c(d+ex)^n))} + \frac{(3g^2)\,\mathrm{Subst}\left(\int \frac{x^2}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{be^3n} - (2g(ef-d$$

$$= -\frac{(d+ex)(f+gx)^2}{ben(a+b\log(c(d+ex)^n))} + \frac{\left(3g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{a+bx}\,dx, x, \mathrm{lo}\right.}{be^3n^2}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^3n^2} + \frac{4e^{-\frac{2a}{bn}}g(ef-dg)(d+ex)}{}$$

Mathematica [B] time = 0.56144, size = 1015, normalized size = 3.92

$$\frac{e^{-\frac{3a}{bn}}\left(c(d+ex)^n\right)^{-3/n}\left(ae^2e^{\frac{2a}{bn}}f^2(d+ex)\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\left(c(d+ex)^n\right)^{2/n} + ad^2e^{\frac{2a}{bn}}g^2(d+ex)\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)(c(d+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (-(b*d*e^2*E^((3*a)/(b*n))*f^2*n*(c*(d + e*x)^n)^(3/n)) - b*e^3*E^((3*a)/(b
*n))*f^2*n*x*(c*(d + e*x)^n)^(3/n) - 2*b*d*e^2*E^((3*a)/(b*n))*f*g*n*x*(c*(
```

```
d + e*x)^n)^(3/n) - 2*b*e^3*E^((3*a)/(b*n))*f*g*n*x^2*(c*(d + e*x)^n)^(3/n)
 - b*d*e^2*E^((3*a)/(b*n))*g^2*n*x^2*(c*(d + e*x)^n)^(3/n) - b*e^3*E^((3*a)
/(b*n))*g^2*n*x^3*(c*(d + e*x)^n)^(3/n) + a*e^2*E^((2*a)/(b*n))*f^2*(d + e*
x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] -
2*a*d*e*E^((2*a)/(b*n))*f*g*(d + e*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(
a + b*Log[c*(d + e*x)^n])/(b*n)] + a*d^2*E^((2*a)/(b*n))*g^2*(d + e*x)*(c*(
d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)] + 4*a*e*E
^(a/(b*n))*f*g*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*L
og[c*(d + e*x)^n]))/(b*n)] - 4*a*d*E^(a/(b*n))*g^2*(d + e*x)^2*(c*(d + e*x)
^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 3*a*g^2*(d
 + e*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + b*e^2*E^((2
*a)/(b*n))*f^2*(d + e*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(
d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] - 2*b*d*e*E^((2*a)/(b*n))*f*g*(d + e
*x)*(c*(d + e*x)^n)^(2/n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*L
og[c*(d + e*x)^n] + b*d^2*E^((2*a)/(b*n))*g^2*(d + e*x)*(c*(d + e*x)^n)^(2/
n)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)]*Log[c*(d + e*x)^n] + 4*b
*e*E^(a/(b*n))*f*g*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a +
 b*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n] - 4*b*d*E^(a/(b*n))*g^2*(
d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n
]))/(b*n)]*Log[c*(d + e*x)^n] + 3*b*g^2*(d + e*x)^3*ExpIntegralEi[(3*(a + b
*Log[c*(d + e*x)^n]))/(b*n)]*Log[c*(d + e*x)^n])/(b^2*e^3*E^((3*a)/(b*n))*n
^2*(c*(d + e*x)^n)^(3/n)*(a + b*Log[c*(d + e*x)^n]))
```

Maple [F] time = 3.691, size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2}{\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{eg^2x^3+df^2+\left(2\,efg+dg^2\right)x^2+\left(ef^2+2\,dfg\right)x}{b^2en\log\left((ex+d)^n\right)+b^2en\log\left(c\right)+aben}+\int\frac{3\,eg^2x^2+ef^2+2\,dfg+2\left(2\,efg+dg^2\right)x}{b^2en\log\left((ex+d)^n\right)+b^2en\log\left(c\right)+aben}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*g^2*x^3 + d*f^2 + (2*e*f*g + d*g^2)*x^2 + (e*f^2 + 2*d*f*g)*x)/(b^2*e*n
*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n) + integrate((3*e*g^2*x^2 + e*
f^2 + 2*d*f*g + 2*(2*e*f*g + d*g^2)*x)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*
log(c) + a*b*e*n), x)
```

Fricas [A] time = 2.09722, size = 1025, normalized size = 3.96

$$\Bigg(4\left(aefg-adg^2+\left(befg-bdg^2\right)n\log\left(ex+d\right)+\left(befg-bdg^2\right)\log\left(c\right)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(e^2x^2+2\,dex+d^2\right)e^{\left(\frac{2(b\log\ldots}{}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] (4*(a*e*f*g - a*d*g^2 + (b*e*f*g - b*d*g^2)*n*log(e*x + d) + (b*e*f*g - b*d
*g^2)*log(c))*e^((b*log(c) + a)/(b*n))*log_integral((e^2*x^2 + 2*d*e*x + d^
2)*e^(2*(b*log(c) + a)/(b*n))) + (a*e^2*f^2 - 2*a*d*e*f*g + a*d^2*g^2 + (b*
e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*log(e*x + d) + (b*e^2*f^2 - 2*b*d*e*f*
g + b*d^2*g^2)*log(c))*e^(2*(b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^
((b*log(c) + a)/(b*n))) - (b*e^3*g^2*n*x^3 + b*d*e^2*f^2*n + (2*b*e^3*f*g +
 b*d*e^2*g^2)*n*x^2 + (b*e^3*f^2 + 2*b*d*e^2*f*g)*n*x)*e^(3*(b*log(c) + a)/
(b*n)) + 3*(b*g^2*n*log(e*x + d) + b*g^2*log(c) + a*g^2)*log_integral((e^3*
x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*e^(3*(b*log(c) + a)/(b*n))))*e^(-3*(b*
log(c) + a)/(b*n))/(b^3*e^3*n^3*log(e*x + d) + b^3*e^3*n^2*log(c) + a*b^2*e
^3*n^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(f + gx\right)^{2}}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [B] time = 1.43274, size = 2755, normalized size = 10.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^3*b*g^2*n*e^3/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a
*b^2*n^2*e^6) + 2*(x*e + d)^2*b*d*g^2*n*e^3/(b^3*n^3*e^6*log(x*e + d) + b^3
*n^2*e^6*log(c) + a*b^2*n^2*e^6) - (x*e + d)*b*d^2*g^2*n*e^3/(b^3*n^3*e^6*l
og(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) + b*d^2*g^2*n*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e^6*log(
x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 2*(x*e + d)^2*b*f
*g*n*e^4/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) +
2*(x*e + d)*b*d*f*g*n*e^4/(b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) +
a*b^2*n^2*e^6) - 2*b*d*f*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b
*n) + 4)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b
^2*n^2*e^6)*c^(1/n)) - 4*b*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
d))*e^(-2*a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^
6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + b*d^2*g^2*Ei(log(c)/n + a/(b*n) + log(
x*e + d))*e^(-a/(b*n) + 3)*log(c)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*e^6*
log(c) + a*b^2*n^2*e^6)*c^(1/n)) - (x*e + d)*b*f^2*n*e^5/(b^3*n^3*e^6*log(x
*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6) + a*d^2*g^2*Ei(log(c)/n + a/(
b*n) + log(x*e + d))*e^(-a/(b*n) + 3)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^2*
e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + b*f^2*n*Ei(log(c)/n + a/(b*n) + log(
```

```
x*e + d))*e^(-a/(b*n) + 5)*log(x*e + d)/((b^3*n^3*e^6*log(x*e + d) + b^3*n^
2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*b*f*g*n*Ei(2*log(c)/n + 2*a/(b*n
) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)/((b^3*n^3*e^6*log(x*e +
 d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*b*g^2*n*Ei(3*log(c)/
n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*e + d)/((b^3*n^3*e
^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n)) - 2*b*d*f*g*
Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(c)/((b^3*n^3*e^6
*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 4*b*d*g^2*Ei
(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)/((b^3*n
^3*e^6*log(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) - 2*a*d*
f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)/((b^3*n^3*e^6*lo
g(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) - 4*a*d*g^2*Ei(2*
log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)/((b^3*n^3*e^6*log
(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + b*f^2*Ei(log(c)/
n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(c)/((b^3*n^3*e^6*log(x*e +
 d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*b*f*g*Ei(2*log(c)/n
+ 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(c)/((b^3*n^3*e^6*log(x
*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*b*g^2*Ei(3*log(c
)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)/((b^3*n^3*e^6*l
og(x*e + d) + b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n)) + a*f^2*Ei(log(c
)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)/((b^3*n^3*e^6*log(x*e + d) +
 b^3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(1/n)) + 4*a*f*g*Ei(2*log(c)/n + 2*a
/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)/((b^3*n^3*e^6*log(x*e + d) + b^
3*n^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(2/n)) + 3*a*g^2*Ei(3*log(c)/n + 3*a/(b
*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)/((b^3*n^3*e^6*log(x*e + d) + b^3*n
^2*e^6*log(c) + a*b^2*n^2*e^6)*c^(3/n))
```

3.96 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=177

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^2n^2}-$$

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^
2*e^2*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpIntegra
lEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^2*E^((2*a)/(b*n))*n^2*(c*
(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rubi [A] time = 0.248099, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^2e^2n^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^
2*e^2*E^(a/(b*n))*n^2*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpIntegra
lEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^2*e^2*E^((2*a)/(b*n))*n^2*(c*
(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^2}\,dx &= -\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))}+\frac{2\int\frac{f+gx}{a+b\log(c(d+ex)^n)}\,dx}{bn}-\frac{(ef-dg)\int\frac{1}{a+b\log(c(d+ex)^n)}\,dx}{ben}\\
&= -\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))}+\frac{2\int\left(\frac{ef-dg}{e(a+b\log(c(d+ex)^n))}+\frac{g(d+ex)}{e(a+b\log(c(d+ex)^n))}\right)dx}{bn}-\frac{(ef-dg)}{}\\
&= -\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))}+\frac{(2g)\int\frac{d+ex}{a+b\log(c(d+ex)^n)}\,dx}{ben}+\frac{(2(ef-dg))\int\frac{1}{a+b\log(c(d+ex)^n)}}{ben}\\
&= -\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}-\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))}\\
&= -\frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}-\frac{(d+ex)(f+gx)}{ben\,(a+b\log(c(d+ex)^n))}\\
&= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2e^2n^2}+\frac{2e^{-\frac{2a}{bn}}g(d+ex)^2\left(c(d+ex)^n\right)}{b^2e^2}
\end{aligned}$$

Mathematica [A] time = 0.286889, size = 208, normalized size = 1.18

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}(a+b\log(c(d+ex)^n))\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-2g(d+ex)(a+b\right.}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] -(((d + e*x)*(b*e*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n)*(f + g*x) - E^(a/
(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(a + b*Log[c*(d + e
```

```
*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n]) - 2*g*(d + e*x)*ExpIntegralEi[(2*
(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e^2*E^
((2*a)/(b*n))*n^2*(c*(d + e*x)^n)^(2/n)*(a + b*Log[c*(d + e*x)^n]))
```

Maple [F] time = 3.636, size = 0, normalized size = 0.

$$\int \frac{gx+f}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{egx^{2}+df+\left(ef+dg\right)x}{b^{2}en\log\left(\left(ex+d\right)^{n}\right)+b^{2}en\log\left(c\right)+aben}+\int \frac{2\,egx+ef+dg}{b^{2}en\log\left(\left(ex+d\right)^{n}\right)+b^{2}en\log\left(c\right)+aben}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*g*x^2 + d*f + (e*f + d*g)*x)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c)
 + a*b*e*n) + integrate((2*e*g*x + e*f + d*g)/(b^2*e*n*log((e*x + d)^n) + b
^2*e*n*log(c) + a*b*e*n), x)
```

Fricas [A] time = 2.12993, size = 590, normalized size = 3.33

$$\frac{\left(\left(aef-adg+\left(bef-bdg\right)n\log\left(ex+d\right)+\left(bef-bdg\right)\log\left(c\right)\right)e^{\left(\frac{b\log\left(c\right)+a}{bn}\right)}\operatorname{log\_integral}\left(\left(ex+d\right)e^{\left(\frac{b\log\left(c\right)+a}{bn}\right)}\right)-\left(be^{2}gnx^{2}\right.}{b^{3}e^{2}n^{3}\log}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] ((a*e*f - a*d*g + (b*e*f - b*d*g)*n*log(e*x + d) + (b*e*f - b*d*g)*log(c))*
e^((b*log(c) + a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))) -
 (b*e^2*g*n*x^2 + b*d*e*f*n + (b*e^2*f + b*d*e*g)*n*x)*e^(2*(b*log(c) + a)/
(b*n)) + 2*(b*g*n*log(e*x + d) + b*g*log(c) + a*g)*log_integral((e^2*x^2 +
2*d*e*x + d^2)*e^(2*(b*log(c) + a)/(b*n))))*e^(-2*(b*log(c) + a)/(b*n))/(b^
3*e^2*n^3*log(e*x + d) + b^3*e^2*n^2*log(c) + a*b^2*e^2*n^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f+gx}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**2, x)
```

Giac [B] time = 1.33972, size = 1328, normalized size = 7.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^2*b*g*n*e/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2
*n^2*e^3) + (x*e + d)*b*d*g*n*e/(b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log
(c) + a*b^2*n^2*e^3) - b*d*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/
(b*n) + 1)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a
*b^2*n^2*e^3)*c^(1/n)) - (x*e + d)*b*f*n*e^2/(b^3*n^3*e^3*log(x*e + d) + b^
3*n^2*e^3*log(c) + a*b^2*n^2*e^3) + b*f*n*Ei(log(c)/n + a/(b*n) + log(x*e +
 d))*e^(-a/(b*n) + 2)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3
*log(c) + a*b^2*n^2*e^3)*c^(1/n)) + 2*b*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*l
og(x*e + d))*e^(-2*a/(b*n) + 1)*log(x*e + d)/((b^3*n^3*e^3*log(x*e + d) + b
^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(2/n)) - b*d*g*Ei(log(c)/n + a/(b*n) +
 log(x*e + d))*e^(-a/(b*n) + 1)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2
*e^3*log(c) + a*b^2*n^2*e^3)*c^(1/n)) - a*d*g*Ei(log(c)/n + a/(b*n) + log(x
*e + d))*e^(-a/(b*n) + 1)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) +
 a*b^2*n^2*e^3)*c^(1/n)) + b*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/
(b*n) + 2)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n
^2*e^3)*c^(1/n)) + 2*b*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*
a/(b*n) + 1)*log(c)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2
*n^2*e^3)*c^(2/n)) + a*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n)
+ 2)/((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(1/
n)) + 2*a*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 1)/
((b^3*n^3*e^3*log(x*e + d) + b^3*n^2*e^3*log(c) + a*b^2*n^2*e^3)*c^(2/n))
```

3.97 $\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=96

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rubi [A] time = 0.063036, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2}-\frac{d+ex}{ben\left(a+b\log\left(c(d+ex)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(b*
n))*n^2*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(b*e*n*(a + b*Log[c*(d + e*x)^n
]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{ben(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx, x, d+ex\right)}{ben}$$
$$= -\frac{d+ex}{ben(a+b\log(c(d+ex)^n))} + \frac{\left((d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{a+bx}\,dx, x, \log(c(d+\right.}{ben^2}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2en^2} - \frac{d+ex}{ben(a+b\log(c(d+ex)^n))}$$

Mathematica [A] time = 0.049329, size = 123, normalized size = 1.28

$$-\frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(bne^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}} - (a+b\log(c(d+ex)^n))\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{b^2en^2(a+b\log(c(d+ex)^n))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-2),x]
```

```
[Out] -(((d + e*x)*(b*E^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1) - ExpIntegralEi[(a + b
*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])))/(b^2*e*E^(a/(b*n))
*n^2*(c*(d + e*x)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])))
```

Maple [C] time = 0.081, size = 457, normalized size = 4.8

$$-2\,\frac{ex+d}{\left(2\,a+2\,b\ln(c)+2\,b\ln\left((ex+d)^n\right)-ib\pi\,\text{csgn}(ic)\,\text{csgn}\left(i(ex+d)^n\right)\text{csgn}\left(ic(ex+d)^n\right)+ib\pi\,\text{csgn}(ic)\left(\text{csgn}\left(ic(ex+\right.\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] -2/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)/b/n/e*(e*x+d)-1/b^
2/n^2/e*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*b*(ln((e*x+d)
^n)-n*ln(e*x+d))+2*a)/b/n)*exp(1/2*(I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*n*ln(e*x+d)-2*b
*ln(c)-2*b*ln((e*x+d)^n)-2*a)/b/n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{ex+d}{b^2en\log\left((ex+d)^n\right)+b^2en\log(c)+aben} + \int \frac{1}{b^2n\log\left((ex+d)^n\right)+b^2n\log(c)+abn}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n) + integrat
e(1/(b^2*n*log((e*x + d)^n) + b^2*n*log(c) + a*b*n), x)
```

Fricas [A] time = 2.17017, size = 292, normalized size = 3.04

$$-\frac{\left((benx+bdn)e^{\left(\frac{b\log(c)+a}{bn}\right)}-(bn\log(ex+d)+b\log(c)+a)\,\text{log\_integral}\left((ex+d)e^{\left(\frac{b\log(c)+a}{bn}\right)}\right)\right)e^{\left(-\frac{b\log(c)+a}{bn}\right)}}{b^3en^3\log(ex+d)+b^3en^2\log(c)+ab^2en^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] -((b*e*n*x + b*d*n)*e^((b*log(c) + a)/(b*n)) - (b*n*log(e*x + d) + b*log(c)
 + a)*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))))*e^(-(b*log(c) + a)/
(b*n))/(b^3*e*n^3*log(e*x + d) + b^3*e*n^2*log(c) + a*b^2*e*n^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-2), x)
```

Giac [B] time = 1.28831, size = 414, normalized size = 4.31

$$\frac{bn\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}+\log(xe+d)\right)e^{\left(-\frac{a}{bn}\right)}\log(xe+d)}{\left(b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e\right)c^{\left(\frac{1}{n}\right)}}-\frac{(xe+d)bn}{b^3n^3e\log(xe+d)+b^3n^2e\log(c)+ab^2n^2e}+\frac{b\text{Ei}\left(\frac{\log(c)}{n}+\frac{a}{bn}\right.}{\left(b^3n^3e\log(xe+d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)/((b^3*n
^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) - (x*e + d)*b*
n/(b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2*e) + b*Ei(log(c)/n
 + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^3*n^3*e*log(x*e + d) + b
^3*n^2*e*log(c) + a*b^2*n^2*e)*c^(1/n)) + a*Ei(log(c)/n + a/(b*n) + log(x*e
 + d))*e^(-a/(b*n))/((b^3*n^3*e*log(x*e + d) + b^3*n^2*e*log(c) + a*b^2*n^2
*e)*c^(1/n))
```

3.98 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi [A] time = 0.0341539, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx=\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx$$

Mathematica [A] time = 0.56871, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A] time = 1.888, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$(ef - dg)\int \frac{1}{b^2ef^2n\log(c) + abef^2n + (b^2eg^2n\log(c) + abeg^2n)x^2 + 2(b^2efgn\log(c) + abefgn)x + (b^2eg^2nx^2 + 2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] (e*f - d*g)*integrate(1/(b^2*e*f^2*n*log(c) + a*b*e*f^2*n + (b^2*e*g^2*n*lo
g(c) + a*b*e*g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(c) + a*b*e*f*g*n)*x + (b^2*e*g
^2*n*x^2 + 2*b^2*e*f*g*n*x + b^2*e*f^2*n)*log((e*x + d)^n)), x) - (e*x + d)
/(b^2*e*f*n*log(c) + a*b*e*f*n + (b^2*e*g*n*log(c) + a*b*e*g*n)*x + (b^2*e*
g*n*x + b^2*e*f*n)*log((e*x + d)^n))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2gx + a^2f + (b^2gx + b^2f)\log\left((ex + d)^n c\right)^2 + 2(abgx + abf)\log\left((ex + d)^n c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((e*x + d)^n*c)^2 + 2*(a
*b*g*x + a*b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b\log\left(c(d + ex)^n\right)\right)^2 (f + gx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx + f)\left(b\log\left((ex + d)^n c\right) + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^2), x)
```

3.99 $\int \frac{1}{(f+gx)^2(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi [A] time = 0.0334217, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx=\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 4.54796, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A] time = 3.427, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)^2\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{ex+d}{b^2ef^2n\log(c)+abef^2n+\left(b^2eg^2n\log(c)+abeg^2n\right)x^2+2\left(b^2efgn\log(c)+abefgn\right)x+\left(b^2eg^2nx^2+2\,b^2efgnx+b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)/(b^2*e*f^2*n*log(c) + a*b*e*f^2*n + (b^2*e*g^2*n*log(c) + a*b*e*
g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(c) + a*b*e*f*g*n)*x + (b^2*e*g^2*n*x^2 + 2*
b^2*e*f*g*n*x + b^2*e*f^2*n)*log((e*x + d)^n)) - integrate((e*g*x - e*f + 2
*d*g)/(b^2*e*f^3*n*log(c) + a*b*e*f^3*n + (b^2*e*g^3*n*log(c) + a*b*e*g^3*n
)*x^3 + 3*(b^2*e*f*g^2*n*log(c) + a*b*e*f*g^2*n)*x^2 + 3*(b^2*e*f^2*g*n*log
(c) + a*b*e*f^2*g*n)*x + (b^2*e*g^3*n*x^3 + 3*b^2*e*f*g^2*n*x^2 + 3*b^2*e*f
^2*g*n*x + b^2*e*f^3*n)*log((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2g^2x^2+2\,a^2fgx+a^2f^2+\left(b^2g^2x^2+2\,b^2fgx+b^2f^2\right)\log\left((ex+d)^nc\right)^2+2\left(abg^2x^2+2\,abfgx+abf^2\right)\log\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g^2*x^2 + 2*a^2*f*g*x + a^2*f^2 + (b^2*g^2*x^2 + 2*b^2*f*g*
x + b^2*f^2)*log((e*x + d)^n*c)^2 + 2*(a*b*g^2*x^2 + 2*a*b*f*g*x + a*b*f^2)
*log((e*x + d)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^2\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^2), x)
```

3.100 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=351

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^3e^3n^3}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3}$$

```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
2*b^3*e^3*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^3*E^((2*a
)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(d + e*x)^3*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)])/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e
*x)^n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(2*b*e*n*(a + b*Log[c*(d + e*x)^n])
^2) + ((e*f - d*g)*(d + e*x)*(f + g*x))/(b^2*e^2*n^2*(a + b*Log[c*(d + e*x)
^n])) - (3*(d + e*x)*(f + g*x)^2)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rubi [A] time = 0.864587, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 33, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310}

$$\frac{4ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^3e^3n^3}+\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^3,x]
```


```
[Out] ((e*f - d*g)^2*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(
2*b^3*e^3*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (4*g*(e*f - d*g)*(d + e
*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^3*E^((2*a
)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)) + (9*g^2*(d + e*x)^3*ExpIntegralEi[(3*(
a + b*Log[c*(d + e*x)^n]))/(b*n)])/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e
*x)^n)^(3/n)) - ((d + e*x)*(f + g*x)^2)/(2*b*e*n*(a + b*Log[c*(d + e*x)^n])
^2) + ((e*f - d*g)*(d + e*x)*(f + g*x))/(b^2*e^2*n^2*(a + b*Log[c*(d + e*x)
^n])) - (3*(d + e*x)*(f + g*x)^2)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^3}\,dx = -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{3\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^2}\,dx}{2bn} - \frac{(ef-dg)\int \frac{f+gx}{(a+b\log(c(d+ex)}}{ben}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{3(d+ex)(f}{2b^2en^2\,(a+b\log(}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{3(d+ex)(f}{2b^2en^2\,(a+b\log(}$$

$$= -\frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)(f+gx)}{b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{3(d+ex)(f}{2b^2en^2\,(a+b\log(}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^3e^3n^3} - \frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+e}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^3e^3n^3} - \frac{(d+ex)(f+gx)^2}{2ben\,(a+b\log(c(d+e}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^2(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^3n^3} + \frac{4e^{-\frac{2a}{bn}}g(ef-dg)(d+ex)}{}$$

Mathematica [A] time = 1.48522, size = 351, normalized size = 1.

$$\frac{e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-8ge^{\frac{a}{bn}}(d+ex)(dg\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] ((d + e*x)*(E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*ExpIntegral
Ei[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2 - 8*E^(a/
(b*n))*g*(-(e*f) + d*g)*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi[(2*(
a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2 + 9*g^2*(d +
 e*x)^2*ExpIntegralEi[(3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d
 + e*x)^n])^2 - b*e*E^((3*a)/(b*n))*n*(c*(d + e*x)^n)^(3/n)*(f + g*x)*(b*e*
n*(f + g*x) + a*(e*f + 2*d*g + 3*e*g*x) + b*(2*d*g + e*(f + 3*g*x))*Log[c*(
d + e*x)^n])))/(2*b^3*e^3*E^((3*a)/(b*n))*n^3*(c*(d + e*x)^n)^(3/n)*(a + b*
Log[c*(d + e*x)^n])^2)
```

Maple [F] time = 3.762, size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2}{\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(3\,ae^2g^2+\left(e^2g^2n+3\,e^2g^2\log(c)\right)b\right)x^3+\left(\left(4\,e^2fg+5\,deg^2\right)a+\left(2\,e^2fgn+deg^2n+\left(4\,e^2fg+5\,deg^2\right)\log(c)\right)b\right)x^2+\left(de\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((3*a*e^2*g^2 + (e^2*g^2*n + 3*e^2*g^2*log(c))*b)*x^3 + ((4*e^2*f*g +
5*d*e*g^2)*a + (2*e^2*f*g*n + d*e*g^2*n + (4*e^2*f*g + 5*d*e*g^2)*log(c))*b
)*x^2 + (d*e*f^2 + 2*d^2*f*g)*a + (d*e*f^2*n + (d*e*f^2 + 2*d^2*f*g)*log(c)
)*b + ((e^2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*a + (e^2*f^2*n + 2*d*e*f*g*n + (e^
2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*log(c))*b)*x + (3*b*e^2*g^2*x^3 + (4*e^2*f*g
 + 5*d*e*g^2)*b*x^2 + (e^2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*b*x + (d*e*f^2 + 2*
d^2*f*g)*b)*log((e*x + d)^n))/(b^4*e^2*n^2*log((e*x + d)^n)^2 + b^4*e^2*n^2
*log(c)^2 + 2*a*b^3*e^2*n^2*log(c) + a^2*b^2*e^2*n^2 + 2*(b^4*e^2*n^2*log(c
) + a*b^3*e^2*n^2)*log((e*x + d)^n)) + integrate(1/2*(9*e^2*g^2*x^2 + e^2*f
^2 + 6*d*e*f*g + 2*d^2*g^2 + 2*(4*e^2*f*g + 5*d*e*g^2)*x)/(b^3*e^2*n^2*log(
(e*x + d)^n) + b^3*e^2*n^2*log(c) + a*b^2*e^2*n^2), x)
```

Fricas [B] time = 2.36863, size = 2404, normalized size = 6.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(8*(a^2*e*f*g - a^2*d*g^2 + (b^2*e*f*g - b^2*d*g^2)*n^2*log(e*x + d)^2
+ (b^2*e*f*g - b^2*d*g^2)*log(c)^2 + 2*((b^2*e*f*g - b^2*d*g^2)*n*log(c) +
(a*b*e*f*g - a*b*d*g^2)*n)*log(e*x + d) + 2*(a*b*e*f*g - a*b*d*g^2)*log(c))
*e^((b*log(c) + a)/(b*n))*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*lo
g(c) + a)/(b*n))) + (a^2*e^2*f^2 - 2*a^2*d*e*f*g + a^2*d^2*g^2 + (b^2*e^2*f
^2 - 2*b^2*d*e*f*g + b^2*d^2*g^2)*n^2*log(e*x + d)^2 + (b^2*e^2*f^2 - 2*b^2
*d*e*f*g + b^2*d^2*g^2)*log(c)^2 + 2*((b^2*e^2*f^2 - 2*b^2*d*e*f*g + b^2*d^
2*g^2)*n*log(c) + (a*b*e^2*f^2 - 2*a*b*d*e*f*g + a*b*d^2*g^2)*n)*log(e*x +
d) + 2*(a*b*e^2*f^2 - 2*a*b*d*e*f*g + a*b*d^2*g^2)*log(c))*e^(2*(b*log(c) +
 a)/(b*n))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))) - (b^2*d*e^2*f^
2*n^2 + (b^2*e^3*g^2*n^2 + 3*a*b*e^3*g^2*n)*x^3 + ((2*b^2*e^3*f*g + b^2*d*e
^2*g^2)*n^2 + (4*a*b*e^3*f*g + 5*a*b*d*e^2*g^2)*n)*x^2 + (a*b*d*e^2*f^2 + 2
*a*b*d^2*e*f*g)*n + ((b^2*e^3*f^2 + 2*b^2*d*e^2*f*g)*n^2 + (a*b*e^3*f^2 + 6
*a*b*d*e^2*f*g + 2*a*b*d^2*e*g^2)*n)*x + (3*b^2*e^3*g^2*n^2*x^3 + (4*b^2*e^
3*f*g + 5*b^2*d*e^2*g^2)*n^2*x^2 + (b^2*e^3*f^2 + 6*b^2*d*e^2*f*g + 2*b^2*d
^2*e*g^2)*n^2*x + (b^2*d*e^2*f^2 + 2*b^2*d^2*e*f*g)*n^2)*log(e*x + d) + (3*
b^2*e^3*g^2*n*x^3 + (4*b^2*e^3*f*g + 5*b^2*d*e^2*g^2)*n*x^2 + (b^2*e^3*f^2
+ 6*b^2*d*e^2*f*g + 2*b^2*d^2*e*g^2)*n*x + (b^2*d*e^2*f^2 + 2*b^2*d^2*e*f*g
)*n)*log(c))*e^(3*(b*log(c) + a)/(b*n)) + 9*(b^2*g^2*n^2*log(e*x + d)^2 + b
^2*g^2*log(c)^2 + 2*a*b*g^2*log(c) + a^2*g^2 + 2*(b^2*g^2*n*log(c) + a*b*g^
2*n)*log(e*x + d))*log_integral((e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*e
^(3*(b*log(c) + a)/(b*n))))*e^(-3*(b*log(c) + a)/(b*n))/(b^5*e^3*n^5*log(e*
x + d)^2 + b^5*e^3*n^3*log(c)^2 + 2*a*b^4*e^3*n^3*log(c) + a^2*b^3*e^3*n^3
+ 2*(b^5*e^3*n^4*log(c) + a*b^4*e^3*n^4)*log(e*x + d))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(f + gx\right)^2}{\left(a + b\log\left(c\left(d + ex\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**3, x)
```

Giac [B] time = 2.04016, size = 11335, normalized size = 32.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] -3/2*(x*e + d)^3*b^2*g^2*n^2*e^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x*e + d)^2*b
^2*d*g^2*n^2*e^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*l
og(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 +
2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n^2*e
^3*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^
6*log(c) + a^2*b^3*n^3*e^6) + 1/2*b^2*d^2*g^2*n^2*Ei(log(c)/n + a/(b*n) + l
og(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 1/2*(x
*e + d)^3*b^2*g^2*n^2*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x
*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*
b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)^2*b^2*d*g^2*n^2*e^3/(b^5*
n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^
3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n^2*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*
b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^
6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*(x*e + d)^2*b^2*
f*g*n^2*e^4*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*
e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b
^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n^2*e^4*log(x*e
+ d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*
b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) +
a^2*b^3*n^3*e^6) - b^2*d*f*g*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-
a/(b*n) + 4)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*lo
g(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2
*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*b^2*d*g^2*n^2*Ei(2*lo
g(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(x*e + d)^2/((b^
5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*
e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*
n^3*e^6)*c^(2/n)) - 3/2*(x*e + d)^3*b^2*g^2*n*e^3*log(c)/(b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x
*e + d)^2*b^2*d*g^2*n*e^3*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^
6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2
 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*d^2*g^2*n*
e^3*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
+ 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log
(c) + a^2*b^3*n^3*e^6) + b^2*d^2*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d)
)*e^(-a/(b*n) + 3)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5
*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*l
og(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - (x*e + d)^2*
b^2*f*g*n^2*e^4/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^
6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n^2*e^4/(b^5*n^5*e^6*log(
x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e +
d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 3/2
*(x*e + d)^3*a*b*g^2*n*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(
x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a
*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 2*(x*e + d)^2*a*b*d*g^2*n*e^3/(b^5
*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e
^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n
^3*e^6) - 1/2*(x*e + d)*a*b*d^2*g^2*n*e^3/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b
^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6
*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 1/2*(x*e + d)*b^2*f
^2*n^2*e^5*log(x*e + d)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e
 + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^
```

4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + a*b*d^2*g^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 1/2*b^2*f^2*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 4*b^2*f*g*n^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9/2*b^2*g^2*n^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*e + d)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(3/n)) - 2*(x*e + d)^2*b^2*f*g*n*e^4*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*b^2*d*f*g*n*e^4*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*b^2*d*f*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 8*b^2*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 1/2*b^2*d^2*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 1/2*(x*e + d)*b^2*f^2*n^2*e^5/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*(x*e + d)^2*a*b*f*g*n*e^4/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + (x*e + d)*a*b*d*f*g*n*e^4/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) - 2*a*b*d*f*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 4)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 8*a*b*d*g^2*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) - 1/2*(x*e + d)*b^2*f^2*n*e^5*log(c)/(b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + a*b*d^2*g^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + b^2*f^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 8*b^2*f*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9*b^2*g^2*n*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*e

```
 + d)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(
c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*
log(c) + a^2*b^3*n^3*e^6)*c^(3/n)) - b^2*d*f*g*Ei(log(c)/n + a/(b*n) + log(
x*e + d))*e^(-a/(b*n) + 4)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^
4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(
c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*b^2*d*g^2*Ei(
2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)^2/((b^5*
n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^
3*e^6)*c^(2/n)) - 1/2*(x*e + d)*a*b*f^2*n*e^5/(b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6) + 1/2*a^2*d^2*g^2
*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 3)/((b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n
)) + a*b*f^2*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(x
*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) +
2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c
) + a^2*b^3*n^3*e^6)*c^(1/n)) + 8*a*b*f*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*l
og(x*e + d))*e^(-2*a/(b*n) + 4)*log(x*e + d)/((b^5*n^5*e^6*log(x*e + d)^2 +
 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3
*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9*a*b*
g^2*n*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(x*
e + d)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2
*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c)
 + a^2*b^3*n^3*e^6)*c^(3/n)) - 2*a*b*d*f*g*Ei(log(c)/n + a/(b*n) + log(x*e
+ d))*e^(-a/(b*n) + 4)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*
log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 +
 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 8*a*b*d*g^2*Ei(2*log(
c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)*log(c)/((b^5*n^5*e^6*
log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*
e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c
^(2/n)) + 1/2*b^2*f^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5
)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
 + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*lo
g(c) + a^2*b^3*n^3*e^6)*c^(1/n)) + 4*b^2*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*
log(x*e + d))*e^(-2*a/(b*n) + 4)*log(c)^2/((b^5*n^5*e^6*log(x*e + d)^2 + 2*
b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^
6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9/2*b^2*g
^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)^2/
((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*
n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*
b^3*n^3*e^6)*c^(3/n)) - a^2*d*f*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(
-a/(b*n) + 4)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log
(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6
*log(c) + a^2*b^3*n^3*e^6)*c^(1/n)) - 4*a^2*d*g^2*Ei(2*log(c)/n + 2*a/(b*n)
 + 2*log(x*e + d))*e^(-2*a/(b*n) + 3)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*
n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*lo
g(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + a*b*f^2*Ei(lo
g(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)*log(c)/((b^5*n^5*e^6*log(
x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e +
d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/
n)) + 8*a*b*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) +
 4)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c)
 + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*lo
g(c) + a^2*b^3*n^3*e^6)*c^(2/n)) + 9*a*b*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*
log(x*e + d))*e^(-3*a/(b*n) + 3)*log(c)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^
5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*
log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(3/n)) + 1/2*a^2*f^2
```

```
*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 5)/((b^5*n^5*e^6*log(x
*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d
) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(1/n
)) + 4*a^2*f*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) +
4)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log(x*e + d)*log(c) + 2*a*b
^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*a*b^4*n^3*e^6*log(c) + a
^2*b^3*n^3*e^6)*c^(2/n)) + 9/2*a^2*g^2*Ei(3*log(c)/n + 3*a/(b*n) + 3*log(x*
e + d))*e^(-3*a/(b*n) + 3)/((b^5*n^5*e^6*log(x*e + d)^2 + 2*b^5*n^4*e^6*log
(x*e + d)*log(c) + 2*a*b^4*n^4*e^6*log(x*e + d) + b^5*n^3*e^6*log(c)^2 + 2*
a*b^4*n^3*e^6*log(c) + a^2*b^3*n^3*e^6)*c^(3/n))
```

3.101 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=261

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^3e^2n^3}+\frac{}{2b^2e}$$

```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*
b^3*e^2*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpInteg
ralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^2*E^((2*a)/(b*n))*n^3*(
c*(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) + ((e*f - d*g)*(d + e*x))/(2*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n
])) - ((d + e*x)*(f + g*x))/(b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rubi [A] time = 0.360439, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 8, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2297}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3}+\frac{2ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Ei}\left(\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)}{b^3e^2n^3}+\frac{}{2b^2e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^3,x]
```


```
[Out] ((e*f - d*g)*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*
b^3*e^2*E^(a/(b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) + (2*g*(d + e*x)^2*ExpInteg
ralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)])/(b^3*e^2*E^((2*a)/(b*n))*n^3*(
c*(d + e*x)^n)^(2/n)) - ((d + e*x)*(f + g*x))/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) + ((e*f - d*g)*(d + e*x))/(2*b^2*e^2*n^2*(a + b*Log[c*(d + e*x)^n
])) - ((d + e*x)*(f + g*x))/(b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^3}\,dx = -\frac{(d+ex)(f+gx)}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^2}\,dx}{bn} - \frac{(ef-dg)\int \frac{1}{(a+b\log(c(d+ex)^n))}}{2ben}$$

$$= -\frac{(d+ex)(f+gx)}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{(d+ex)(f+gx)}{b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{2\int \frac{f+gx}{a+b\log(c(d+ex)^n)}}{b^2n^2}$$

$$= -\frac{(d+ex)(f+gx)}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)}{2b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{(d+ex)(f}{b^2en^2\,(a+b\log(}$$

$$= -\frac{(d+ex)(f+gx)}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{(ef-dg)(d+ex)}{2b^2e^2n^2\,(a+b\log(c(d+ex)^n))} - \frac{(d+ex)(f}{b^2en^2\,(a+b\log(}$$

$$= -\frac{3e^{-\frac{a}{bn}}(ef-dg)(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} - \frac{(d+ex)(f+gx}{2ben\,(a+b\log(c(d+}$$

$$= -\frac{3e^{-\frac{a}{bn}}(ef-dg)(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} - \frac{(d+ex)(f+gx}{2ben\,(a+b\log(c(d+}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3e^2n^3} + \frac{2e^{-\frac{2a}{bn}}g(d+ex)^2\,(c(d+ex}{b}$$

Mathematica [A] time = 0.416702, size = 256, normalized size = 0.98

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(-e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)-4g(d+ex)(a+b\right.}{2b^3e^2n^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] -((d + e*x)*(-(E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*ExpIntegralEi
[(a + b*Log[c*(d + e*x)^n])/(b*n)]*(a + b*Log[c*(d + e*x)^n])^2) - 4*g*(d +
 e*x)*ExpIntegralEi[(2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d +
 e*x)^n])^2 + b*E^((2*a)/(b*n))*n*(c*(d + e*x)^n)^(2/n)*(b*e*n*(f + g*x) +
a*(e*f + d*g + 2*e*g*x) + b*(d*g + e*(f + 2*g*x))*Log[c*(d + e*x)^n])))/(2*
b^3*e^2*E^((2*a)/(b*n))*n^3*(c*(d + e*x)^n)^(2/n)*(a + b*Log[c*(d + e*x)^n]
)^2)
```

Maple [F] time = 3.707, size = 0, normalized size = 0.

$$\int \frac{gx+f}{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(2\,ae^2g+\left(e^2gn+2\,e^2g\log(c)\right)b\right)x^2+\left(def+d^2g\right)a+\left(defn+\left(def+d^2g\right)\log(c)\right)b+\left(\left(e^2f+3\,deg\right)a+\left(e^2fn+degn\right.\right.}{2\left(b^4e^2n^2\log\left(\left(ex+d\right)^n\right)^2+b^4e^2n^2\log(c)^2+2\,ab^3e^2n^2\log(c)+a^2b^2e^2n^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((2*a*e^2*g + (e^2*g*n + 2*e^2*g*log(c))*b)*x^2 + (d*e*f + d^2*g)*a +
(d*e*f*n + (d*e*f + d^2*g)*log(c))*b + ((e^2*f + 3*d*e*g)*a + (e^2*f*n + d*
e*g*n + (e^2*f + 3*d*e*g)*log(c))*b)*x + (2*b*e^2*g*x^2 + (e^2*f + 3*d*e*g)
*b*x + (d*e*f + d^2*g)*b)*log((e*x + d)^n))/(b^4*e^2*n^2*log((e*x + d)^n)^2
 + b^4*e^2*n^2*log(c)^2 + 2*a*b^3*e^2*n^2*log(c) + a^2*b^2*e^2*n^2 + 2*(b^4
*e^2*n^2*log(c) + a*b^3*e^2*n^2)*log((e*x + d)^n)) + integrate(1/2*(4*e*g*x
 + e*f + 3*d*g)/(b^3*e*n^2*log((e*x + d)^n) + b^3*e*n^2*log(c) + a*b^2*e*n^
2), x)
```

Fricas [B] time = 2.23634, size = 1353, normalized size = 5.18

$$\left(\left(\left(b^2ef-b^2dg\right)n^2\log(ex+d)^2+a^2ef-a^2dg+\left(b^2ef-b^2dg\right)\log(c)^2+2\left(\left(b^2ef-b^2dg\right)n\log(c)+\left(abef-abdg\right)n\right)\log\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(((b^2*e*f - b^2*d*g)*n^2*log(e*x + d)^2 + a^2*e*f - a^2*d*g + (b^2*e*f
 - b^2*d*g)*log(c)^2 + 2*((b^2*e*f - b^2*d*g)*n*log(c) + (a*b*e*f - a*b*d*g
)*n)*log(e*x + d) + 2*(a*b*e*f - a*b*d*g)*log(c))*e^((b*log(c) + a)/(b*n))*
log_integral((e*x + d)*e^((b*log(c) + a)/(b*n))) - (b^2*d*e*f*n^2 + (b^2*e^
2*g*n^2 + 2*a*b*e^2*g*n)*x^2 + (a*b*d*e*f + a*b*d^2*g)*n + ((b^2*e^2*f + b^
2*d*e*g)*n^2 + (a*b*e^2*f + 3*a*b*d*e*g)*n)*x + (2*b^2*e^2*g*n^2*x^2 + (b^2
*e^2*f + 3*b^2*d*e*g)*n^2*x + (b^2*d*e*f + b^2*d^2*g)*n^2)*log(e*x + d) + (
2*b^2*e^2*g*n*x^2 + (b^2*e^2*f + 3*b^2*d*e*g)*n*x + (b^2*d*e*f + b^2*d^2*g)
*n)*log(c))*e^(2*(b*log(c) + a)/(b*n)) + 4*(b^2*g*n^2*log(e*x + d)^2 + b^2*
g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*n*log(c) + a*b*g*n)*log(e*x
+ d))*log_integral((e^2*x^2 + 2*d*e*x + d^2)*e^(2*(b*log(c) + a)/(b*n))))*e
^(-2*(b*log(c) + a)/(b*n))/(b^5*e^2*n^5*log(e*x + d)^2 + b^5*e^2*n^3*log(c)
^2 + 2*a*b^4*e^2*n^3*log(c) + a^2*b^3*e^2*n^3 + 2*(b^5*e^2*n^4*log(c) + a*b
^4*e^2*n^4)*log(e*x + d))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f+gx}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**3, x)
```

Giac [B] time = 1.5777, size = 5554, normalized size = 21.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] -(x*e + d)^2*b^2*g*n^2*e*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n
^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log
(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n
^2*e*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*
log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*
e^3*log(c) + a^2*b^3*n^3*e^3) - 1/2*b^2*d*g*n^2*Ei(log(c)/n + a/(b*n) + log
(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2
*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e
^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e
 + d)^2*b^2*g*n^2*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d
)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^
3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n^2*e/(b^5*n^5*e^3*
log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*
e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) -
 1/2*(x*e + d)*b^2*f*n^2*e^2*log(x*e + d)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b
^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3
```

```
*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + 1/2*b^2*f*n^2*Ei(lo
g(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)^2/((b^5*n^5*
e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*lo
g(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^
3)*c^(1/n)) + 2*b^2*g*n^2*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2
*a/(b*n) + 1)*log(x*e + d)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*l
og(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 +
2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - (x*e + d)^2*b^2*g*n*e*
log(c)/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*
a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c)
+ a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*b^2*d*g*n*e*log(c)/(b^5*n^5*e^3*log(x*e
+ d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) +
 b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - b^2*d*g
*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)*log(
c)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b
^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a
^2*b^3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)*b^2*f*n^2*e^2/(b^5*n^5*e^3*log(x*e
 + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d)
+ b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - (x*e +
 d)^2*a*b*g*n*e/(b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^
3*log(c) + a^2*b^3*n^3*e^3) + 1/2*(x*e + d)*a*b*d*g*n*e/(b^5*n^5*e^3*log(x*
e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d)
 + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) - a*b*d
*g*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(x*e + d)/((
b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^
4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^
3*n^3*e^3)*c^(1/n)) - 1/2*(x*e + d)*b^2*f*n*e^2*log(c)/(b^5*n^5*e^3*log(x*e
 + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d)
+ b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + b^2*f*
n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)*log(c
)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^
4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^
2*b^3*n^3*e^3)*c^(1/n)) + 4*b^2*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e +
 d))*e^(-2*a/(b*n) + 1)*log(x*e + d)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 +
2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*
e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - 1/2*b^2
*d*g*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 1)*log(c)^2/((b^5*
n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^
3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^
3*e^3)*c^(1/n)) - 1/2*(x*e + d)*a*b*f*n*e^2/(b^5*n^5*e^3*log(x*e + d)^2 + 2
*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e
^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3) + a*b*f*n*Ei(log(c)
/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(x*e + d)/((b^5*n^5*e^3*lo
g(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e
+ d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(
1/n)) + 4*a*b*g*n*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n)
 + 1)*log(x*e + d)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d
)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^
3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - a*b*d*g*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 1)*log(c)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*
n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*lo
g(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 1/2*b^2*f*Ei(
log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(c)^2/((b^5*n^5*e^3*
log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*
e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c
^(1/n)) + 2*b^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n)
 + 1)*log(c)^2/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*lo
g(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^
```

```
3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n)) - 1/2*a^2*d*g*Ei(log(c)/n + a/(b*n) +
log(x*e + d))*e^(-a/(b*n) + 1)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3
*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2
+ 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + a*b*f*Ei(log(c)/n +
a/(b*n) + log(x*e + d))*e^(-a/(b*n) + 2)*log(c)/((b^5*n^5*e^3*log(x*e + d)^
2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*
n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 4*a
*b*g*Ei(2*log(c)/n + 2*a/(b*n) + 2*log(x*e + d))*e^(-2*a/(b*n) + 1)*log(c)/
((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log(c) + 2*a*b^4*
n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*
b^3*n^3*e^3)*c^(2/n)) + 1/2*a^2*f*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(
-a/(b*n) + 2)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*e^3*log(x*e + d)*log
(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)^2 + 2*a*b^4*n^3*e^3
*log(c) + a^2*b^3*n^3*e^3)*c^(1/n)) + 2*a^2*g*Ei(2*log(c)/n + 2*a/(b*n) + 2
*log(x*e + d))*e^(-2*a/(b*n) + 1)/((b^5*n^5*e^3*log(x*e + d)^2 + 2*b^5*n^4*
e^3*log(x*e + d)*log(c) + 2*a*b^4*n^4*e^3*log(x*e + d) + b^5*n^3*e^3*log(c)
^2 + 2*a*b^4*n^3*e^3*log(c) + a^2*b^3*n^3*e^3)*c^(2/n))
```

3.102 $\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=135

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rubi [A] time = 0.0803857, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3}-\frac{d+ex}{2b^2en^2\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{d+ex}{2ben\left(a+b\log\left(c(d+ex)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - (d + e*x)/(2*b*e*n*(a + b*Log[c*(d + e*
x)^n])^2) - (d + e*x)/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^3}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^3}\,dx, x, d+ex\right)}{e}$$
$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} + \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx, x, d+ex\right)}{2ben}$$
$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{\text{Subst}\left(\int \frac{1}{a+b\log(c\cdots}\right.}{2b^2e\cdots}$$
$$= -\frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{d+ex}{2b^2en^2\,(a+b\log(c(d+ex)^n))} + \frac{\left((d+ex)\,(c(d+e\cdots\right.}{\cdots}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{d+ex}{2ben\,(a+b\log(c(d+ex)^n))^2} - \frac{\cdots}{2b\cdots}$$

Mathematica [A] time = 0.0527516, size = 118, normalized size = 0.87

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{2b^3en^3} - \frac{(d+ex)\,(a+b\log(c(d+ex)^n)+bn)}{2b^2en^2\,(a+b\log(c(d+ex)^n))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3),x]
```

```
[Out] ((d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(2*b^3*e*E^(a/(
b*n))*n^3*(c*(d + e*x)^n)^n^(-1)) - ((d + e*x)*(a + b*n + b*Log[c*(d + e*x)
^n]))/(2*b^2*e*n^2*(a + b*Log[c*(d + e*x)^n])^2)
```

Maple [C] time = 0.091, size = 735, normalized size = 5.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] -(2*b*e*n*x+2*b*d*n+I*Pi*b*d*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b
*e*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e*x*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-I*Pi*b*d*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*
b*d*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*d*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e
*x*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*e*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)+2*ln(c)*b*e*x+2*b*e*x*ln((e*x+d)^n)+2*ln(c)*b*d+2*a*e*x+2*b*d*ln((
e*x+d)^n)+2*a*d)/(2*a+2*b*ln(c)+2*b*ln((e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3)^2/b^
2/n^2/e-1/2/b^3/n^3/e*Ei(1,-ln(e*x+d)-1/2*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2
*b*(ln((e*x+d)^n)-n*ln(e*x+d))+2*a)/b/n)*exp(1/2*(I*b*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*n
```

```
*ln(e*x+d)-2*b*ln(c)-2*b*ln((e*x+d)^n)-2*a)/b/n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(dn+d\log(c))b+ad+((en+e\log(c))b+ae)x+(bex+bd)\log\left((ex+d)^n\right)}{2\left(b^4en^2\log\left((ex+d)^n\right)^2+b^4en^2\log(c)^2+2\,ab^3en^2\log(c)+a^2b^2en^2+2\left(b^4en^2\log(c)+ab^3en^2\right)\log\left((ex+d)^n\right)\right)}+\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((d*n + d*log(c))*b + a*d + ((e*n + e*log(c))*b + a*e)*x + (b*e*x + b*
d)*log((e*x + d)^n))/(b^4*e*n^2*log((e*x + d)^n)^2 + b^4*e*n^2*log(c)^2 + 2
*a*b^3*e*n^2*log(c) + a^2*b^2*e*n^2 + 2*(b^4*e*n^2*log(c) + a*b^3*e*n^2)*lo
g((e*x + d)^n)) + integrate(1/2/(b^3*n^2*log((e*x + d)^n) + b^3*n^2*log(c)
+ a*b^2*n^2), x)
```

Fricas [B] time = 2.15283, size = 632, normalized size = 4.68

$$-\frac{\left(\left(b^2dn^2+abdn+\left(b^2en^2+aben\right)x+\left(b^2en^2x+b^2dn^2\right)\log(ex+d)+\left(b^2enx+b^2dn\right)\log(c)\right)e^{\left(\frac{b\log(c)+a}{bn}\right)}-\left(b^2n^2\log(ex\right.\right.}{2\left(b^5en^5\log(ex+d)^2+b^5en^3\log(c)^2+2\,ab^4en^3\log(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*d*n^2 + a*b*d*n + (b^2*e*n^2 + a*b*e*n)*x + (b^2*e*n^2*x + b^2*d
*n^2)*log(e*x + d) + (b^2*e*n*x + b^2*d*n)*log(c))*e^((b*log(c) + a)/(b*n))
 - (b^2*n^2*log(e*x + d)^2 + b^2*log(c)^2 + 2*a*b*log(c) + a^2 + 2*(b^2*n*l
og(c) + a*b*n)*log(e*x + d))*log_integral((e*x + d)*e^((b*log(c) + a)/(b*n)
)))*e^(-(b*log(c) + a)/(b*n))/(b^5*e*n^5*log(e*x + d)^2 + b^5*e*n^3*log(c)^
2 + 2*a*b^4*e*n^3*log(c) + a^2*b^3*e*n^3 + 2*(b^5*e*n^4*log(c) + a*b^4*e*n^
4)*log(e*x + d))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3), x)
```

Giac [B] time = 1.36717, size = 1785, normalized size = 13.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] 1/2*b^2*n^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)
^2/((b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n
^4*e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3
*e)*c^(1/n)) - 1/2*(x*e + d)*b^2*n^2*log(x*e + d)/(b^5*n^5*e*log(x*e + d)^2
 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e
*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e) + b^2*n*Ei(log(c)/n + a/(
b*n) + log(x*e + d))*e^(-a/(b*n))*log(x*e + d)*log(c)/((b^5*n^5*e*log(x*e +
 d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*
n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n)) - 1/2*(x*e
+ d)*b^2*n^2/(b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) +
2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^
2*b^3*n^3*e) + a*b*n*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log
(x*e + d)/((b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*
a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*
b^3*n^3*e)*c^(1/n)) - 1/2*(x*e + d)*b^2*n*log(c)/(b^5*n^5*e*log(x*e + d)^2
+ 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*
log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e) + 1/2*b^2*Ei(log(c)/n + a/
(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)^2/((b^5*n^5*e*log(x*e + d)^2 + 2*
b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d) + b^5*n^3*e*log(
c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n)) - 1/2*(x*e + d)*a*b*n
/(b^5*n^5*e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*
e*log(x*e + d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)
 + a*b*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))*log(c)/((b^5*n^5*
e*log(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e
+ d) + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n))
+ 1/2*a^2*Ei(log(c)/n + a/(b*n) + log(x*e + d))*e^(-a/(b*n))/((b^5*n^5*e*lo
g(x*e + d)^2 + 2*b^5*n^4*e*log(x*e + d)*log(c) + 2*a*b^4*n^4*e*log(x*e + d)
 + b^5*n^3*e*log(c)^2 + 2*a*b^4*n^3*e*log(c) + a^2*b^3*n^3*e)*c^(1/n))
```

3.103 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^3},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi [A] time = 0.03413, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^3}\,dx=\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^3}\,dx$$

Mathematica [A] time = 1.21911, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Maple [A] time = 3.516, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*e^2*g*n*x^2 + (d*e*f - d^2*g)*a + (d*e*f*n + (d*e*f - d^2*g)*log(c)
)*b + ((e^2*f - d*e*g)*a + (e^2*f*n + d*e*g*n + (e^2*f - d*e*g)*log(c))*b)*
x + ((e^2*f - d*e*g)*b*x + (d*e*f - d^2*g)*b)*log((e*x + d)^n))/(b^4*e^2*f^
2*n^2*log(c)^2 + 2*a*b^3*e^2*f^2*n^2*log(c) + a^2*b^2*e^2*f^2*n^2 + (b^4*e^
2*g^2*n^2*log(c)^2 + 2*a*b^3*e^2*g^2*n^2*log(c) + a^2*b^2*e^2*g^2*n^2)*x^2
+ (b^4*e^2*g^2*n^2*x^2 + 2*b^4*e^2*f*g*n^2*x + b^4*e^2*f^2*n^2)*log((e*x +
d)^n)^2 + 2*(b^4*e^2*f*g*n^2*log(c)^2 + 2*a*b^3*e^2*f*g*n^2*log(c) + a^2*b^
2*e^2*f*g*n^2)*x + 2*(b^4*e^2*f^2*n^2*log(c) + a*b^3*e^2*f^2*n^2 + (b^4*e^2
*g^2*n^2*log(c) + a*b^3*e^2*g^2*n^2)*x^2 + 2*(b^4*e^2*f*g*n^2*log(c) + a*b^
3*e^2*f*g*n^2)*x)*log((e*x + d)^n)) + integrate(1/2*(e^2*f^2 - 3*d*e*f*g +
2*d^2*g^2 - (e^2*f*g - d*e*g^2)*x)/(b^3*e^2*f^3*n^2*log(c) + a*b^2*e^2*f^3*
n^2 + (b^3*e^2*g^3*n^2*log(c) + a*b^2*e^2*g^3*n^2)*x^3 + 3*(b^3*e^2*f*g^2*n
^2*log(c) + a*b^2*e^2*f*g^2*n^2)*x^2 + 3*(b^3*e^2*f^2*g*n^2*log(c) + a*b^2*
e^2*f^2*g*n^2)*x + (b^3*e^2*g^3*n^2*x^3 + 3*b^3*e^2*f*g^2*n^2*x^2 + 3*b^3*e
^2*f^2*g*n^2*x + b^3*e^2*f^3*n^2)*log((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^3gx + a^3f + \left(b^3gx + b^3f\right)\log\left((ex+d)^n c\right)^3 + 3\left(ab^2gx + ab^2f\right)\log\left((ex+d)^n c\right)^2 + 3\left(a^2bgx + a^2bf\right)\log\left((\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*g*x + a^3*f + (b^3*g*x + b^3*f)*log((e*x + d)^n*c)^3 + 3*(a
*b^2*g*x + a*b^2*f)*log((e*x + d)^n*c)^2 + 3*(a^2*b*g*x + a^2*b*f)*log((e*x
 + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b\log\left(c\left(d + ex\right)^n\right)\right)^3\left(f + gx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**3*(f + g*x)), x)
```

<u>Giac</u> [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^3), x)
```

3.104 $\int \frac{1}{(f+gx)^2(a+b\log(c(d+ex)^n))^3}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)^2\,(a+b\log\left(c(d+ex)^n\right))^3},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi [A] time = 0.0336433, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)^2\,(a+b\log\left(c(d+ex)^n\right))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Defer[Int][1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^2\,(a+b\log\left(c(d+ex)^n\right))^3}\,dx = \int \frac{1}{(f+gx)^2\,(a+b\log\left(c(d+ex)^n\right))^3}\,dx$$

Mathematica [A] time = 4.84387, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)^2\,(a+b\log\left(c(d+ex)^n\right))^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3),x]
```

```
[Out] Integrate[1/((f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^3), x]
```

Maple [A] time = 8.084, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)^2\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int(1/(g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] 1/2*((a*e^2*g - (e^2*g*n - e^2*g*log(c))*b)*x^2 - (d*e*f - 2*d^2*g)*a - (d*
e*f*n + (d*e*f - 2*d^2*g)*log(c))*b - ((e^2*f - 3*d*e*g)*a + (e^2*f*n + d*e
*g*n + (e^2*f - 3*d*e*g)*log(c))*b)*x + (b*e^2*g*x^2 - (e^2*f - 3*d*e*g)*b*
x - (d*e*f - 2*d^2*g)*b)*log((e*x + d)^n))/(b^4*e^2*f^3*n^2*log(c)^2 + 2*a*
b^3*e^2*f^3*n^2*log(c) + a^2*b^2*e^2*f^3*n^2 + (b^4*e^2*g^3*n^2*log(c)^2 +
2*a*b^3*e^2*g^3*n^2*log(c) + a^2*b^2*e^2*g^3*n^2)*x^3 + 3*(b^4*e^2*f*g^2*n^
2*log(c)^2 + 2*a*b^3*e^2*f*g^2*n^2*log(c) + a^2*b^2*e^2*f*g^2*n^2)*x^2 + (b
^4*e^2*g^3*n^2*x^3 + 3*b^4*e^2*f*g^2*n^2*x^2 + 3*b^4*e^2*f^2*g*n^2*x + b^4*
e^2*f^3*n^2)*log((e*x + d)^n)^2 + 3*(b^4*e^2*f^2*g*n^2*log(c)^2 + 2*a*b^3*e
^2*f^2*g*n^2*log(c) + a^2*b^2*e^2*f^2*g*n^2)*x + 2*(b^4*e^2*f^3*n^2*log(c)
+ a*b^3*e^2*f^3*n^2 + (b^4*e^2*g^3*n^2*log(c) + a*b^3*e^2*g^3*n^2)*x^3 + 3*
(b^4*e^2*f*g^2*n^2*log(c) + a*b^3*e^2*f*g^2*n^2)*x^2 + 3*(b^4*e^2*f^2*g*n^2
*log(c) + a*b^3*e^2*f^2*g*n^2)*x)*log((e*x + d)^n)) + integrate(1/2*(e^2*g^
2*x^2 + e^2*f^2 - 6*d*e*f*g + 6*d^2*g^2 - 2*(2*e^2*f*g - 3*d*e*g^2)*x)/(b^3
*e^2*f^4*n^2*log(c) + a*b^2*e^2*f^4*n^2 + (b^3*e^2*g^4*n^2*log(c) + a*b^2*e
^2*g^4*n^2)*x^4 + 4*(b^3*e^2*f*g^3*n^2*log(c) + a*b^2*e^2*f*g^3*n^2)*x^3 +
6*(b^3*e^2*f^2*g^2*n^2*log(c) + a*b^2*e^2*f^2*g^2*n^2)*x^2 + 4*(b^3*e^2*f^3
*g*n^2*log(c) + a*b^2*e^2*f^3*g*n^2)*x + (b^3*e^2*g^4*n^2*x^4 + 4*b^3*e^2*f
*g^3*n^2*x^3 + 6*b^3*e^2*f^2*g^2*n^2*x^2 + 4*b^3*e^2*f^3*g*n^2*x + b^3*e^2*
f^4*n^2)*log((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^3g^2x^2 + 2\,a^3fgx + a^3f^2 + \left(b^3g^2x^2 + 2\,b^3fgx + b^3f^2\right)\log\left(\left(ex+d\right)^n c\right)^3 + 3\,\left(ab^2g^2x^2 + 2\,ab^2fgx + ab^2f^2\right)\log\left(\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*g^2*x^2 + 2*a^3*f*g*x + a^3*f^2 + (b^3*g^2*x^2 + 2*b^3*f*g*
x + b^3*f^2)*log((e*x + d)^n*c)^3 + 3*(a*b^2*g^2*x^2 + 2*a*b^2*f*g*x + a*b^
2*f^2)*log((e*x + d)^n*c)^2 + 3*(a^2*b*g^2*x^2 + 2*a^2*b*f*g*x + a^2*b*f^2)
*log((e*x + d)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^2 \left(b \log \left((ex+d)^n c\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^2/(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^3), x)
```

3.105 $\int (f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=404

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}g\sqrt{n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2(c(d+ex}{2e^3}$$

```
[Out] -(Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
 + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
- (Sqrt[b]*g*(e*f - d*g)*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[
a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n)) - (Sqrt[b]*g^2*Sqrt[n]*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(6*e^3*E^((3*a)/(b*n
))*(c*(d + e*x)^n)^(3/n)) + ((e*f - d*g)^2*(d + e*x)*Sqrt[a + b*Log[c*(d +
e*x)^n]])/e^3 + (g*(e*f - d*g)*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/
e^3 + (g^2*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*e^3)
```

Rubi [A] time = 0.701143, antiderivative size = 404, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}g\sqrt{n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2(c(d+ex}{2e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
 + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
- (Sqrt[b]*g*(e*f - d*g)*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[
a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(2*e^3*E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n)) - (Sqrt[b]*g^2*Sqrt[n]*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(6*e^3*E^((3*a)/(b*n
))*(c*(d + e*x)^n)^(3/n)) + ((e*f - d*g)^2*(d + e*x)*Sqrt[a + b*Log[c*(d +
e*x)^n]])/e^3 + (g*(e*f - d*g)*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/
e^3 + (g^2*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*e^3)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{2g(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex\right.}}{e^2}\right.$$

$$=\frac{g^2\int (d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e^2}+\frac{(2g(ef-dg))\int (d+ex)\sqrt{a+b\log\left(c(\right.}}{e^2}$$

$$=\frac{g^2\,\mathrm{Subst}\left(\int x^2\sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\,\mathrm{Subst}\left(\int x\sqrt{a+b\right.}}{e^3}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+ex)^2\sqrt{a+b\log\left(c(d\right.}}{e^3}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+ex)^2\sqrt{a+b\log\left(c(d\right.}}{e^3}$$

$$=\frac{(ef-dg)^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^3}+\frac{g(ef-dg)(d+ex)^2\sqrt{a+b\log\left(c(d\right.}}{e^3}$$

$$=-\frac{\sqrt{b}e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{n}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^3}-\frac{\sqrt{b}e^{-}}{}$$

Mathematica [A] time = 0.513818, size = 374, normalized size = 0.93

$$\frac{(d+ex)\left(9\sqrt{2\pi}\sqrt{b}g\sqrt{n}e^{-\frac{2a}{bn}}(d+ex)(dg-ef)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)-18\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(ef-dg)^2\left(c(d+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*((-18*Sqrt[b]*(e*f - d*g)^2*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log
[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (9*Sqrt[b]*g*(-(e*f) + d*g)*Sqrt[n]*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d + e
*x)^n)^(2/n)) - (2*Sqrt[b]*g^2*Sqrt[n]*Sqrt[3*Pi]*(d + e*x)^2*Erfi[(Sqrt[3]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((3*a)/(b*n))*(c*(d
 + e*x)^n)^(3/n)) + 36*(e*f - d*g)^2*Sqrt[a + b*Log[c*(d + e*x)^n]] + 36*g*
(e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]] + 12*g^2*(d + e*x)^2*S
qrt[a + b*Log[c*(d + e*x)^n]]))/(36*e^3)
```

Maple [F] time = 0.796, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^2\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^2\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2*sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b\log\left(c\left(d+ex\right)^n\right)}\left(f+gx\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^2\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.106 $\int (f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=255

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}g\sqrt{n}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}(}{4e^2}$$

```
[Out] -(Sqrt[b]*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(2*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) -
(Sqrt[b]*g*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
 + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/
n)) + ((e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/e^2 + (g*(d +
e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e^2)
```

Rubi [A] time = 0.340551, antiderivative size = 255, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}g\sqrt{n}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}(}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(2*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) -
(Sqrt[b]*g*Sqrt[n]*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
 + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/
n)) + ((e*f - d*g)*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/e^2 + (g*(d +
e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e^2)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \left(\frac{(ef-dg)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}+\frac{g(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}\right) dx$$

$$= \frac{g\int (d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e}+\frac{(ef-dg)\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx}{e}$$

$$= \frac{g\,\text{Subst}\left(\int x\sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\text{Subst}\left(\int \sqrt{a+b\log\left(\right.\right.}{e^2}$$

$$= \frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}$$

$$= \frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}$$

$$= \frac{(ef-dg)(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e^2}+\frac{g(d+ex)^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}$$

$$= -\frac{\sqrt{b}e^{-\frac{a}{bn}}(ef-dg)\sqrt{n}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{b}\sqrt{n}}\right)}{2e^2}-\frac{\sqrt{b}e}{}$$

Mathematica [A] time = 0.286951, size = 235, normalized size = 0.92

$$-\frac{e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(4\sqrt{\pi}\sqrt{b}\sqrt{n}e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{2\pi}\sqrt{b}g\sqrt{n}(d+ex)\text{Erfi}\left(\frac{\sqrt{}}{}\right.\right.}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -((d + e*x)*(4*Sqrt[b]*E^(a/(b*n))*(e*f - d*g)*Sqrt[n]*Sqrt[Pi]*(c*(d + e*x
)^n)^n^(-1)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[b
]*g*Sqrt[n]*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n
]])/(Sqrt[b]*Sqrt[n])] - 4*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(2*e*f - d
*g + e*g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]))/(8*e^2*E^((2*a)/(b*n))*(c*(d +
 e*x)^n)^(2/n))
```

Maple [F] time = 0.566, size = 0, normalized size = 0.

$$\int (gx+f)\sqrt{a+b\ln\left(c(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b\log\left(c\,(d+ex)^{n}\right)}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(gx+f\right)\sqrt{b\log\left((ex+d)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.107 $\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=111

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e}$$

```
[Out] -(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(S
qrt[b]*Sqrt[n])])/(2*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*Sqr
t[a + b*Log[c*(d + e*x)^n]])/e
```

Rubi [A] time = 0.0866578, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[n]*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(S
qrt[b]*Sqrt[n])])/(2*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + ((d + e*x)*Sqr
t[a + b*Log[c*(d + e*x)^n]])/e
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx = \frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cx^n\right)}\,dx,x,d+ex\right)}{e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{(bn)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{2e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left(b(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx,x,\log\right.}{2e}$$
$$= \frac{(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{e} - \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx,x,\sqrt{\right.}}{e}$$
$$= -\frac{\sqrt{b}e^{-\frac{a}{bn}}\sqrt{n}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{2e} + \frac{(d+ex)\sqrt{a+b\log\left(c\right.}}{e}$$

Mathematica [A] time = 0.0485265, size = 106, normalized size = 0.95

$$\frac{(d+ex)\left(2\sqrt{a+b\log\left(c(d+ex)^n\right)}-\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\right)}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((d + e*x)*(-((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))) + 2*Sqrt[a + b*L
og[c*(d + e*x)^n]]))/(2*e)
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(ex+d\right)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a + b \log \left(c \left(d + ex\right)^{n}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b \log \left(\left(ex + d\right)^{n} c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.108 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx},x\right)$$

```
[Out] Unintegrable[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x]
```

Rubi [A] time = 0.0473416, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x),x]
```

```
[Out] Defer[Int][Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx = \int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx$$

Mathematica [A] time = 1.15926, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x),x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x]
```

Maple [A] time = 0.891, size = 0, normalized size = 0.

$$\int \frac{1}{gx+f}\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

3.109 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx$

Optimal. Leaf size=87

$$\frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)(ef-dg)}-\frac{ben\text{Unintegrable}\left(\frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{2(ef-dg)}$$

```
[Out] ((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/((e*f - d*g)*(f + g*x)) - (b*e*n
*Unintegrable[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(2*(e*f - d
*g))
```

Rubi [A] time = 0.102329, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/((e*f - d*g)*(f + g*x)) - (b*e*n
*Defer[Int][1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(2*(e*f - d*g
))
```

Rubi steps

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx=\frac{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{(ef-dg)(f+gx)}-\frac{(ben)\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{2(ef-dg)}$$

Mathematica [A] time = 0.318953, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^2,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^2, x]
```

Maple [A] time = 0.889, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^2}\sqrt{a+b\ln\left(c(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log \left((ex+d)^n c\right) + a}}{\left(gx+f\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^2, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a + b \log \left(c \left(d + ex\right)^n\right)}}{\left(f+gx\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**2,x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**2, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log \left((ex+d)^n c\right) + a}}{\left(gx+f\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^2, x)
```

3.110 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^3}\,dx$

Optimal. Leaf size=78

$$\frac{ben\text{Unintegrable}\left(\frac{1}{(d+ex)(f+gx)^2\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{4g}-\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2g(f+gx)^2}$$

```
[Out] -Sqrt[a + b*Log[c*(d + e*x)^n]]/(2*g*(f + g*x)^2) + (b*e*n*Unintegrable[1/(
(d + e*x)*(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(4*g)
```

Rubi [A] time = 0.216465, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3,x]
```

```
[Out] -Sqrt[a + b*Log[c*(d + e*x)^n]]/(2*g*(f + g*x)^2) + (b*e*n*Defer[Int][1/((d
 + e*x)*(f + g*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(4*g)
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx=-\frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2g(f+gx)^2}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)^2\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{4g}$$

Mathematica [A] time = 0.360042, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^3, x]
```

Maple [A] time = 0.892, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)^3}\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left((ex+d)^n c\right)+a}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^3, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left((ex+d)^n c\right)+a}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^3,x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^3, x)
```

3.111 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=526

$$\frac{3\sqrt{\frac{\pi}{2}}\, b^{3/2} g n^{3/2} e^{-\frac{2a}{bn}} (d+ex)^2 (ef-dg) \left(c(d+ex)^n\right)^{-2/n} \operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^3}+\frac{3\sqrt{\pi}\, b^{3/2} n^{3/2} e^{-\frac{a}{bn}} (d+ex)(ef-dg)^2 (c(}{4e}$$

```
[Out] (3*b^(3/2)*(e*f - d*g)^2*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 + (3*b^(3/2)*g*(e*f - d*g)*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)) + (b^(3/2)*g^2*n^(3/2)*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(12*e^3*E^((3*a)/
(b*n))*(c*(d + e*x)^n)^(3/n)) - (3*b*(e*f - d*g)^2*n*(d + e*x)*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(2*e^3) - (3*b*g*(e*f - d*g)*n*(d + e*x)^2*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(4*e^3) - (b*g^2*n*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(6*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)
)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^3 +
(g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(3/2))/(3*e^3)
```

Rubi [A] time = 0.812482, antiderivative size = 526, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$\frac{3\sqrt{\frac{\pi}{2}}\, b^{3/2} g n^{3/2} e^{-\frac{2a}{bn}} (d+ex)^2 (ef-dg) \left(c(d+ex)^n\right)^{-2/n} \operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^3}+\frac{3\sqrt{\pi}\, b^{3/2} n^{3/2} e^{-\frac{a}{bn}} (d+ex)(ef-dg)^2 (c(}{4e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```


```
[Out] (3*b^(3/2)*(e*f - d*g)^2*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 + (3*b^(3/2)*g*(e*f - d*g)*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)) + (b^(3/2)*g^2*n^(3/2)*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(12*e^3*E^((3*a)/
(b*n))*(c*(d + e*x)^n)^(3/n)) - (3*b*(e*f - d*g)^2*n*(d + e*x)*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(2*e^3) - (3*b*g*(e*f - d*g)*n*(d + e*x)^2*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(4*e^3) - (b*g^2*n*(d + e*x)^3*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(6*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)
)/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^3 +
(g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(3/2))/(3*e^3)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

, b, c, d, e, n, p}, x]

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)^2 (a+b\log(c(d+ex)^n))^{3/2}\,dx = \int \left(\frac{(ef-dg)^2 (a+b\log(c(d+ex)^n))^{3/2}}{e^2} + \frac{2g(ef-dg)(d+ex)(a+b\log(\cdots}{e^2}\right.$$
$$= \frac{g^2 \int (d+ex)^2 (a+b\log(c(d+ex)^n))^{3/2}\,dx}{e^2} + \frac{(2g(ef-dg)) \int (d+ex)(a+\cdots}{e^2}$$
$$= \frac{g^2\,\mathrm{Subst}\left(\int x^2 (a+b\log(cx^n))^{3/2}\,dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\,\mathrm{Subst}\left(\int \cdots\right.}{\cdots}$$
$$= \frac{(ef-dg)^2(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e^3} + \frac{g(ef-dg)(d+ex)^2(a+b\,l\cdots}{e^3}$$
$$= -\frac{3b(ef-dg)^2 n(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e^3} - \frac{3bg(ef-dg)n(d+ex)^2\sqrt{\cdots}}{4e^3}$$
$$= -\frac{3b(ef-dg)^2 n(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e^3} - \frac{3bg(ef-dg)n(d+ex)^2\sqrt{\cdots}}{4e^3}$$
$$= -\frac{3b(ef-dg)^2 n(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e^3} - \frac{3bg(ef-dg)n(d+ex)^2\sqrt{\cdots}}{4e^3}$$
$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)^2 n^{3/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e^3} \cdots$$

Mathematica [A] time = 1.08481, size = 446, normalized size = 0.85

$$\frac{(d+ex)\left(108bn(ef-dg)^2\left(\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)-2\sqrt{a+b\log(c(d+ex)^n)}\right)+27bgn(\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*(144*(e*f - d*g)^2*(a + b*Log[c*(d + e*x)^n])^(3/2) + 144*g*(e*f
 - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 48*g^2*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^(3/2) + 4*b*g^2*n*(d + e*x)^2*((Sqrt[b]*Sqrt[n]*Sqr
t[3*Pi]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(
E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) - 6*Sqrt[a + b*Log[c*(d + e*x)^n]])
+ 27*b*g*(e*f - d*g)*n*(d + e*x)*((Sqrt[b]*Sqrt[n]*Sqrt[2*Pi]*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d
 + e*x)^n)^(2/n)) - 4*Sqrt[a + b*Log[c*(d + e*x)^n]]) + 108*b*(e*f - d*g)^2
*n*((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*
Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - 2*Sqrt[a + b*Log[c*(d + e
*x)^n]])))/(144*e^3)
```

Maple [F] time = 0.73, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^2 \left(a+b\ln\left(c\,(ex+d)^n\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^2 \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^2 \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.112 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=330

$$\frac{3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}}{16e^2}$$

```
[Out] (3*b^(3/2)*(e*f - d*g)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
+ e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (3*b^(3/2)*g*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c
*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(16*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)
^(2/n)) - (3*b*(e*f - d*g)*n*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e
^2) - (3*b*g*n*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(8*e^2) + ((e*f
- d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^2 + (g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^(3/2))/(2*e^2)
```

Rubi [A] time = 0.42635, antiderivative size = 330, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$\frac{3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}gn^{3/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}}{16e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(e*f - d*g)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d
+ e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(4*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) +
 (3*b^(3/2)*g*n^(3/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c
*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(16*e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)
^(2/n)) - (3*b*(e*f - d*g)*n*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e
^2) - (3*b*g*n*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(8*e^2) + ((e*f
- d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/e^2 + (g*(d + e*x)^2*(a
+ b*Log[c*(d + e*x)^n])^(3/2))/(2*e^2)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx = \int\left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}+\frac{g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3}}{e}\right.$$

$$=\frac{g\int(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}\,dx}{e}+\frac{(ef-dg)\int\left(a+b\log\left(c(d+ex\right.\right.}{e}$$

$$=\frac{g\,\mathrm{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^{3/2}\,dx,x,d+ex\right)}{e^2}+\frac{(ef-dg)\,\mathrm{Subst}\left(\int\left(a+b\right.\right.}{e}$$

$$=\frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e^2}+\frac{g(d+ex)^2\left(a+b\log\left(c(d+e\right.\right.}{2e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b\log\left(\right.}}{8e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b\log\left(\right.}}{8e^2}$$

$$=-\frac{3b(ef-dg)n(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{2e^2}-\frac{3bgn(d+ex)^2\sqrt{a+b\log\left(\right.}}{8e^2}$$

$$=\frac{3b^{3/2}e^{-\frac{a}{bn}}(ef-dg)n^{3/2}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e^2}+$$

Mathematica [A] time = 0.433954, size = 282, normalized size = 0.85

$$\frac{(d+ex)\left(24bn(ef-dg)\left(\sqrt{\pi}\sqrt{b}\sqrt{n}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)-2\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)+3bgn(d+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*(32*(e*f - d*g)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 16*g*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^(3/2) + 3*b*g*n*(d + e*x)*((Sqrt[b]*Sqrt[n]*Sq
rt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/
(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - 4*Sqrt[a + b*Log[c*(d + e*x)^n]])
 + 24*b*(e*f - d*g)*n*((Sqrt[b]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d +
 e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - 2*Sqrt
[a + b*Log[c*(d + e*x)^n]])))/(32*e^2)
```

Maple [F] time = 0.511, size = 0, normalized size = 0.

$$\int \left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{3}{2}}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)*(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.113 $\int (a+b\log(c(d+ex)^n))^{3/2}\,dx$

Optimal. Leaf size=143

$$\frac{3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)\sqrt{a}}{}$$

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rubi [A] time = 0.108858, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$\frac{3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e}+\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{e}-\frac{3bn(d+ex)\sqrt{a}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (3*b^(3/2)*n^(3/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(
Sqrt[b]*Sqrt[n])])/(4*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (3*b*n*(d + e
*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*
x)^n])^(3/2))/e
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{3/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e} - \frac{(3bn)\,\text{Subst}\left(\int \sqrt{a+b\log(cx^n)}\,dx, x, d+ex\right)}{2e}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e} + \frac{(3b^2n^2)\,\text{Su}}{}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e} + \frac{(3b^2n(d+}{}$$
$$= -\frac{3bn(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{e} + \frac{(3bn(d+e}{}$$
$$= \frac{3b^{3/2}e^{-\frac{a}{bn}}n^{3/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{4e} - \frac{3bn(d+ex)\sqrt{a+b\,\text{lo}}}{2e}$$

Mathematica [A] time = 0.134487, size = 127, normalized size = 0.89

$$\frac{(d+ex)\left(3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+2\sqrt{a+b\log(c(d+ex)^n)}(2a+2b\log(c(d+ex)^n)-3b\right.}{4e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] ((d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Lo
g[c*(d + e*x)^n]]*(2*a - 3*b*n + 2*b*Log[c*(d + e*x)^n])))/(4*e)
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c(ex+d)^n\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left(\left(ex + d\right)^{n} c\right) + a\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.114 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

Rubi [A] time = 0.0564951, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx=\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx$$

Mathematica [A] time = 2.04815, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x),x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x]
```

Maple [A] time = 0.97, size = 0, normalized size = 0.

$$\int \frac{1}{gx+f}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{3}{2}}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(3/2)/(f + g*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f), x)
```

3.115 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^2}\,dx$

Optimal. Leaf size=87

$$\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)(ef-dg)}-\frac{3ben\text{Unintegrable}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx},x\right)}{2(ef-dg)}$$

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/((e*f - d*g)*(f + g*x)) - (3*b
*e*n*Unintegrable[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x])/(2*(e*f - d
*g))
```

Rubi [A] time = 0.105616, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/((e*f - d*g)*(f + g*x)) - (3*b
*e*n*Defer[Int][Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x), x])/(2*(e*f - d*g
))
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2}\,dx=\frac{(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(ef-dg)(f+gx)}-\frac{(3ben)\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{f+gx}\,dx}{2(ef-dg)}$$

Mathematica [A] time = 0.884291, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^2, x]
```

Maple [A] time = 0.88, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)^2}\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^2, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^2, x)
```

3.116 $\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx$

Optimal. Leaf size=78

$$\frac{3ben\text{Unintegrable}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{(d+ex)(f+gx)^2},x\right)}{4g}-\frac{(a+b\log(c(d+ex)^n))^{3/2}}{2g(f+gx)^2}$$

```
[Out] -(a + b*Log[c*(d + e*x)^n])^(3/2)/(2*g*(f + g*x)^2) + (3*b*e*n*Unintegrable
[Sqrt[a + b*Log[c*(d + e*x)^n]]/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi [A] time = 0.207254, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3,x]
```

```
[Out] -(a + b*Log[c*(d + e*x)^n])^(3/2)/(2*g*(f + g*x)^2) + (3*b*e*n*Defer[Int][S
qrt[a + b*Log[c*(d + e*x)^n]]/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx = -\frac{(a+b\log(c(d+ex)^n))^{3/2}}{2g(f+gx)^2}+\frac{(3ben)\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(d+ex)(f+gx)^2} dx}{4g}$$

Mathematica [A] time = 0.831871, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(f+gx)^3} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x)^3, x]
```

Maple [A] time = 0.915, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^3} \left(a+b\ln\left(c(ex+d)^n\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^3, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(3/2)/(g*x+f)**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(3/2)/(g*x+f)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)/(g*x + f)^3, x)
```

3.117 $\int (f+gx)^2 \left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=660

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{32e^3}-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\,(c}{8e^3}$$

```
[Out] (-15*b^(5/2)*(e*f - d*g)^2*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c
*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)) - (15*b^(5/2)*g*(e*f - d*g)*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(32*e^3*E^((2*a)/(b*n)
)*(c*(d + e*x)^n)^(2/n)) - (5*b^(5/2)*g^2*n^(5/2)*Sqrt[Pi/3]*(d + e*x)^3*Er
fi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(72*e^3*E^(
(3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + (15*b^2*(e*f - d*g)^2*n^2*(d + e*x)*S
qrt[a + b*Log[c*(d + e*x)^n]])/(4*e^3) + (15*b^2*g*(e*f - d*g)*n^2*(d + e*x
)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(16*e^3) + (5*b^2*g^2*n^2*(d + e*x)^3*S
qrt[a + b*Log[c*(d + e*x)^n]])/(36*e^3) - (5*b*(e*f - d*g)^2*n*(d + e*x)*(a
 + b*Log[c*(d + e*x)^n])^(3/2))/(2*e^3) - (5*b*g*(e*f - d*g)*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(3/2))/(4*e^3) - (5*b*g^2*n*(d + e*x)^3*(a + b*L
og[c*(d + e*x)^n])^(3/2))/(18*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*
(d + e*x)^n])^(5/2))/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x
)^n])^(5/2))/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(5/2))/(3*e^
3)
```

Rubi [A] time = 0.983588, antiderivative size = 660, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{32e^3}-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\,(c}{8e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*(e*f - d*g)^2*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c
*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^3*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)) - (15*b^(5/2)*g*(e*f - d*g)*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(32*e^3*E^((2*a)/(b*n)
)*(c*(d + e*x)^n)^(2/n)) - (5*b^(5/2)*g^2*n^(5/2)*Sqrt[Pi/3]*(d + e*x)^3*Er
fi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(72*e^3*E^(
(3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + (15*b^2*(e*f - d*g)^2*n^2*(d + e*x)*S
qrt[a + b*Log[c*(d + e*x)^n]])/(4*e^3) + (15*b^2*g*(e*f - d*g)*n^2*(d + e*x
)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(16*e^3) + (5*b^2*g^2*n^2*(d + e*x)^3*S
qrt[a + b*Log[c*(d + e*x)^n]])/(36*e^3) - (5*b*(e*f - d*g)^2*n*(d + e*x)*(a
 + b*Log[c*(d + e*x)^n])^(3/2))/(2*e^3) - (5*b*g*(e*f - d*g)*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(3/2))/(4*e^3) - (5*b*g^2*n*(d + e*x)^3*(a + b*L
og[c*(d + e*x)^n])^(3/2))/(18*e^3) + ((e*f - d*g)^2*(d + e*x)*(a + b*Log[c*
(d + e*x)^n])^(5/2))/e^3 + (g*(e*f - d*g)*(d + e*x)^2*(a + b*Log[c*(d + e*x
)^n])^(5/2))/e^3 + (g^2*(d + e*x)^3*(a + b*Log[c*(d + e*x)^n])^(5/2))/(3*e^
3)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
+ e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)^2 (a+b\log(c(d+ex)^n))^{5/2}\,dx = \int \left(\frac{(ef-dg)^2 (a+b\log(c(d+ex)^n))^{5/2}}{e^2} + \frac{2g(ef-dg)(d+ex)(a+b\log(c(d\right.$$

$$= \frac{g^2 \int (d+ex)^2 (a+b\log(c(d+ex)^n))^{5/2}\,dx}{e^2} + \frac{(2g(ef-dg)) \int (d+ex)(a+b\,\mathrm{l}}{e^2}$$

$$= \frac{g^2\,\mathrm{Subst}\left(\int x^2 (a+b\log(cx^n))^{5/2}\,dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg))\,\mathrm{Subst}\left(\int x\,(\right.}{}$$

$$= \frac{(ef-dg)^2 (d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e^3} + \frac{g(ef-dg)(d+ex)^2 (a+b\log}{e^3}$$

$$= -\frac{5b(ef-dg)^2 n(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e^3} - \frac{5bg(ef-dg)n(d+ex)^2 (}{4e}$$

$$= \frac{15b^2 (ef-dg)^2 n^2 (d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e^3} + \frac{15b^2 g(ef-dg)n^2 (d+ex)^2}{16e}$$

$$= \frac{15b^2 (ef-dg)^2 n^2 (d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e^3} + \frac{15b^2 g(ef-dg)n^2 (d+ex)^2}{16e}$$

$$= \frac{15b^2 (ef-dg)^2 n^2 (d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e^3} + \frac{15b^2 g(ef-dg)n^2 (d+ex)^2}{16e}$$

$$= -\frac{15b^{5/2} e^{-\frac{a}{bn}} (ef-dg)^2 n^{5/2} \sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^3} -$$

Mathematica [A] time = 1.71718, size = 511, normalized size = 0.77

$$\frac{(d+ex)\left(-1080bn(ef-dg)^2\left(3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log(c(d+ex)^n)}(2a+2b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(1728*(e*f - d*g)^2*(a + b*Log[c*(d + e*x)^n])^(5/2) + 1728*g*(e
*f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2) + 576*g^2*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^(5/2) - 1080*b*(e*f - d*g)^2*n*((3*b^(3/2)*n^(3/
2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(
b*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b
*n + 2*b*Log[c*(d + e*x)^n])) - 40*b*g^2*n*(d + e*x)^2*((b^(3/2)*n^(3/2)*Sq
rt[3*Pi]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/
(E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + 6*Sqrt[a + b*Log[c*(d + e*x)^n]]*
(2*a - b*n + 2*b*Log[c*(d + e*x)^n])) - 135*b*g*(e*f - d*g)*n*(d + e*x)*((3
*b^(3/2)*n^(3/2)*Sqrt[2*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(
Sqrt[b]*Sqrt[n])])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + 4*Sqrt[a + b*L
og[c*(d + e*x)^n]]*(4*a - 3*b*n + 4*b*Log[c*(d + e*x)^n]))))/(1728*e^3)
```

Maple [F] time = 0.722, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^2 \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^2 \left(b \log \left((ex+d)^n c\right)+a\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^2 \left(b \log \left((ex+d)^n c\right)+a\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.118 $\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=413

$$-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^2}-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}}{64e^2}$$

```
[Out] (-15*b^(5/2)*(e*f - d*g)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 - (15*b^(5/2)*g*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(64*e^2*E^((2*a)/(b*n))*(c*(d + e*x)
^n)^(2/n)) + (15*b^2*(e*f - d*g)*n^2*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n
]])/(4*e^2) + (15*b^2*g*n^2*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(32
*e^2) - (5*b*(e*f - d*g)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/(2*e
^2) - (5*b*g*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/(8*e^2) + ((e*
f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/e^2 + (g*(d + e*x)^2*(
a + b*Log[c*(d + e*x)^n])^(5/2))/(2*e^2)
```

Rubi [A] time = 0.508177, antiderivative size = 413, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310}

$$-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^2}-\frac{15\sqrt{\frac{\pi}{2}}b^{5/2}gn^{5/2}e^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}}{64e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```


```
[Out] (-15*b^(5/2)*(e*f - d*g)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(
d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(8*e^2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))
 - (15*b^(5/2)*g*n^(5/2)*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(64*e^2*E^((2*a)/(b*n))*(c*(d + e*x)
^n)^(2/n)) + (15*b^2*(e*f - d*g)*n^2*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n
]])/(4*e^2) + (15*b^2*g*n^2*(d + e*x)^2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(32
*e^2) - (5*b*(e*f - d*g)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(3/2))/(2*e
^2) - (5*b*g*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^(3/2))/(8*e^2) + ((e*
f - d*g)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/e^2 + (g*(d + e*x)^2*(
a + b*Log[c*(d + e*x)^n])^(5/2))/(2*e^2)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx = \int \left(\frac{(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e} + \frac{g(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e}\right)$$

$$= \frac{g\int (d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}\,dx}{e} + \frac{(ef-dg)\int \left(a+b\log\left(c(d+ex)^n\right)\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int x\left(a+b\log\left(cx^n\right)\right)^{5/2}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst}\left(\int (a+b\log\right.}{e^2}$$

$$= \frac{(ef-dg)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{5/2}}{e^2} + \frac{g(d+ex)^2\left(a+b\log\left(c(d+ex)^n\right.\right.}{2e^2}$$

$$= -\frac{5b(ef-dg)n(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}{2e^2} - \frac{5bgn(d+ex)^2\left(a+b\log\left(c(\right.\right.}{8e^2}$$

$$= \frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2} + \frac{15b^2gn^2(d+ex)^2\sqrt{a+b\log}}{32e^2}$$

$$= \frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2} + \frac{15b^2gn^2(d+ex)^2\sqrt{a+b\log}}{32e^2}$$

$$= \frac{15b^2(ef-dg)n^2(d+ex)\sqrt{a+b\log\left(c(d+ex)^n\right)}}{4e^2} + \frac{15b^2gn^2(d+ex)^2\sqrt{a+b\log}}{32e^2}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}(ef-dg)n^{5/2}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e^2} - \ldots$$

Mathematica [A] time = 0.692662, size = 326, normalized size = 0.79

$$\frac{(d+ex)\left(-80bn(ef-dg)\left(3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}\left(c(d+ex)^n\right)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log\left(c(d+ex)^n\right)}\left(2a+2b\log\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(128*(e*f - d*g)*(a + b*Log[c*(d + e*x)^n])^(5/2) + 64*g*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^(5/2) - 80*b*(e*f - d*g)*n*((3*b^(3/2)*n^(3/2
)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b
*n))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*
n + 2*b*Log[c*(d + e*x)^n])) - 5*b*g*n*(d + e*x)*((3*b^(3/2)*n^(3/2)*Sqrt[2
*Pi]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(E^(
(2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + 4*Sqrt[a + b*Log[c*(d + e*x)^n]]*(4*a
 - 3*b*n + 4*b*Log[c*(d + e*x)^n]))))/(128*e^2)
```

Maple [F] time = 0.487, size = 0, normalized size = 0.

$$\int \left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.119 $\int (a + b\log(c(d + ex)^n))^{5/2}\, dx$

Optimal. Leaf size=179

$$-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e}+\frac{(d+ex)(a}{}$$

```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```

Rubi [A] time = 0.12998, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2296, 2300, 2180, 2204}

$$-\frac{15\sqrt{\pi}b^{5/2}n^{5/2}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e}+\frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e}+\frac{(d+ex)(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*n^(5/2)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]
/(Sqrt[b]*Sqrt[n])])/(8*e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (15*b^2*n^2
*(d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(4*e) - (5*b*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^(3/2))/(2*e) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5
/2))/e
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^{5/2}\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^{5/2}\,dx, x, d+ex\right)}{e}$$
$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e} - \frac{(5bn)\,\text{Subst}\left(\int (a+b\log(cx^n))^{3/2}\,dx, x, d+e$$
$$= -\frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{e} + \frac{(15b$$
$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(a$$
$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(a$$
$$= \frac{15b^2n^2(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}{4e} - \frac{5bn(d+ex)(a+b\log(c(d+ex)^n))^{3/2}}{2e} + \frac{(a$$
$$= -\frac{15b^{5/2}e^{-\frac{a}{bn}}n^{5/2}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{8e} + \frac{15b^2n^2(d+ex)$$

Mathematica [A] time = 0.165548, size = 152, normalized size = 0.85

$$\frac{(d+ex)\left(8(a+b\log(c(d+ex)^n))^{5/2} - 5bn\left(3\sqrt{\pi}b^{3/2}n^{3/2}e^{-\frac{a}{bn}}(c(d+ex)^n)^{-1/n}\,\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right) + 2\sqrt{a+b\log(c(d$$
$$8e$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] ((d + e*x)*(8*(a + b*Log[c*(d + e*x)^n])^(5/2) - 5*b*n*((3*b^(3/2)*n^(3/2)*
Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])/(E^(a/(b*n
))*(c*(d + e*x)^n)^n^(-1)) + 2*Sqrt[a + b*Log[c*(d + e*x)^n]]*(2*a - 3*b*n
+ 2*b*Log[c*(d + e*x)^n]))))/(8*e)
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c(ex+d)^n\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left((ex + d)^n c\right) + a\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left((ex + d)^n c\right) + a\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.120 $\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

Rubi [A] time = 0.0573681, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x),x]

[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$$

Mathematica [A] time = 2.01852, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x),x]

[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x), x]
```

Maple [A] time = 0.949, size = 0, normalized size = 0.

$$\int \frac{1}{gx+f}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f),x)

[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f), x)
```

3.121 $\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^2} dx$

Optimal. Leaf size=87

$$\frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)(ef-dg)} - \frac{5ben\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx}, x\right)}{2(ef-dg)}$$

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/((e*f - d*g)*(f + g*x)) - (5*b
*e*n*Unintegrable[(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x])/(2*(e*f -
 d*g))
```

Rubi [A] time = 0.113502, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2,x]
```

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^(5/2))/((e*f - d*g)*(f + g*x)) - (5*b
*e*n*Defer[Int][(a + b*Log[c*(d + e*x)^n])^(3/2)/(f + g*x), x])/(2*(e*f - d
*g))
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^2} dx = \frac{(d+ex)(a+b\log(c(d+ex)^n))^{5/2}}{(ef-dg)(f+gx)} - \frac{(5ben)\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{f+gx} dx}{2(ef-dg)}$$

Mathematica [A] time = 6.82224, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^2, x]
```

Maple [A] time = 0.846, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^2} \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^2, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^2, x)
```

3.122 $\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3}\,dx$

Optimal. Leaf size=78

$$\frac{5ben\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^{3/2}}{(d+ex)(f+gx)^2},x\right)}{4g}-\frac{(a+b\log(c(d+ex)^n))^{5/2}}{2g(f+gx)^2}$$

```
[Out] -(a + b*Log[c*(d + e*x)^n])^(5/2)/(2*g*(f + g*x)^2) + (5*b*e*n*Unintegrable
[(a + b*Log[c*(d + e*x)^n])^(3/2)/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi [A] time = 0.234874, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3,x]
```

```
[Out] -(a + b*Log[c*(d + e*x)^n])^(5/2)/(2*g*(f + g*x)^2) + (5*b*e*n*Defer[Int][(
a + b*Log[c*(d + e*x)^n])^(3/2)/((d + e*x)*(f + g*x)^2), x])/(4*g)
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3}\,dx=-\frac{(a+b\log(c(d+ex)^n))^{5/2}}{2g(f+gx)^2}+\frac{(5ben)\int \frac{(a+b\log(c(d+ex)^n))^{3/2}}{(d+ex)(f+gx)^2}\,dx}{4g}$$

Mathematica [A] time = 6.11897, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^{5/2}}{(f+gx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3,x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^(5/2)/(f + g*x)^3, x]
```

Maple [A] time = 0.878, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^3}\left(a+b\ln\left(c(ex+d)^n\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^3, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(5/2)/(g*x+f)**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}{\left(gx+f\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(5/2)/(g*x+f)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(5/2)/(g*x + f)^3, x)
```

3.123 $\int \frac{(f+gx)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=383

$$\frac{\sqrt{3\pi}g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^4\sqrt{n}}+\frac{3\sqrt{\frac{\pi}{2}}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/}}{\sqrt{b}e^4\sqrt{n}}$$

```
[Out] ((e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*S
qrt[n])])/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(4/n)) + (
3*g*(e*f - d*g)^2*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((2*a)/(b*n))*Sqrt[n]*(c*(d
+ e*x)^n)^(2/n)) + (g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((3*a)/(b*
n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```

Rubi [A] time = 0.727602, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{\sqrt{3\pi}g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^4\sqrt{n}}+\frac{3\sqrt{\frac{\pi}{2}}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/}}{\sqrt{b}e^4\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```


```
[Out] ((e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*S
qrt[n])])/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(4/n)) + (
3*g*(e*f - d*g)^2*Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((2*a)/(b*n))*Sqrt[n]*(c*(d
+ e*x)^n)^(2/n)) + (g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^4*E^((3*a)/(b*
n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^3}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \left(\frac{(ef-dg)^3}{e^3\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{3g(ef-dg)^2(d+ex)}{e^3\sqrt{a+b\log\left(c(d+ex)^n\right)}} + \frac{3g^2(ef-dg)(d+ex)^2}{e^3\sqrt{a+b\log\left(c(d+ex)^n\right)}} +$$

$$= \frac{g^3\int \frac{(d+ex)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^3} + \frac{\left(3g^2(ef-dg)\right)\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^3} + \frac{\left(3g(ef-dg)^2\right)\int \frac{}{\sqrt{a+b\,\mathrm{l}}}}{e^3}$$

$$= \frac{g^3\,\mathrm{Subst}\left(\int \frac{x^3}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^4} + \frac{\left(3g^2(ef-dg)\right)\mathrm{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+\right.}{e^4}$$

$$= \frac{\left(g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^4 n} + \frac{\left(3g^2(ef-dg)(d+\right.}{}$$

$$= \frac{\left(2g^3(d+ex)^4\left(c(d+ex)^n\right)^{-4/n}\right)\mathrm{Subst}\left(\int e^{-\frac{4a}{bn}+\frac{4x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{be^4 n} + \frac{\left(6g^2(\right.}{}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^4\sqrt{n}} + \frac{e^{-\frac{4a}{bn}}g^3\sqrt{\pi}(d+ex)^4\,(c}{}$$

Mathematica [A] time = 0.417212, size = 331, normalized size = 0.86

$$\sqrt{\pi}e^{-\frac{4a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-4/n}\left(2\sqrt{3}g^2e^{\frac{a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+3\sqrt{2}ge^{\frac{2a}{bn}}(d+ex)(e$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(2*E^((3*a)/(b*n))*(e*f - d*g)^3*(c*(d + e*x)^n)^(3/n)*
Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + g^3*(d + e*x)^3*Er
fi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + 3*Sqrt[2]*E^((2*
a)/(b*n))*g*(e*f - d*g)^2*(d + e*x)*(c*(d + e*x)^n)^(2/n)*Erfi[(Sqrt[2]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + 2*Sqrt[3]*E^(a/(b*n))*g^2
*(e*f - d*g)*(d + e*x)^2*(c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[3]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(2*Sqrt[b]*e^4*E^((4*a)/(b*n))*Sqrt
[n]*(c*(d + e*x)^n)^(4/n))
```

Maple [F] time = 0.741, size = 0, normalized size = 0.

$$\int (gx+f)^3 \frac{1}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^3/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^3}{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral((f + g*x)**3/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.124 $\int \frac{(f+gx)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=283

$$\frac{\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^3\sqrt{n}}+\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erf}$$

```
[Out] ((e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*
x)^n)^(2/n)) + (g^2*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((3*a)/(b*n))*Sqrt[n]*(c*(
d + e*x)^n)^(3/n))
```

Rubi [A] time = 0.515722, antiderivative size = 283, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^3\sqrt{n}}+\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erf}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (
g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*
x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*
x)^n)^(2/n)) + (g^2*Sqrt[Pi/3]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(Sqrt[b]*e^3*E^((3*a)/(b*n))*Sqrt[n]*(c*(
d + e*x)^n)^(3/n))
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \left(\frac{(ef-dg)^2}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}+\frac{2g(ef-dg)(d+ex)}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}+\frac{g^2(d+ex)^2}{e^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}\right) d$$

$$=\frac{g^2\int\frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^2}+\frac{(2g(ef-dg))\int\frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e^2}+\frac{(ef-dg)^2\int\frac{1}{\sqrt{a+b\log(c(d+}}}{e^2}$$

$$=\frac{g^2\,\mathrm{Subst}\left(\int\frac{x^2}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{e^3}+\frac{(2g(ef-dg))\,\mathrm{Subst}\left(\int\frac{x}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right.}{e^3}$$

$$=\frac{\left(g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int\frac{e^{\frac{3x}{n}}}{\sqrt{a+bx}}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{e^3n}+\frac{\left(2g(ef-dg)(d+\right.}{}$$

$$=\frac{\left(2g^2(d+ex)^3\left(c(d+ex)^n\right)^{-3/n}\right)\mathrm{Subst}\left(\int e^{-\frac{3a}{bn}+\frac{3x^2}{bn}}\,dx,x,\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{be^3n}+\frac{(4g(e}{}$$

$$=\frac{e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^3\sqrt{n}}+\frac{e^{-\frac{2a}{bn}}g(ef-dg)\sqrt{2\pi}(d}{}$$

Mathematica [A] time = 0.241724, size = 252, normalized size = 0.89

$$\frac{\sqrt{\pi}e^{-\frac{3a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-3/n}\left(3e^{\frac{2a}{bn}}(ef-dg)^2\left(c(d+ex)^n\right)^{2/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+3\sqrt{2}ge^{\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+\right.\right.}{3\sqrt{b}e^3\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(3*E^((2*a)/(b*n))*(e*f - d*g)^2*(c*(d + e*x)^n)^(2/n)*
Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + 3*Sqrt[2]*E^(a/(b*
n))*g*(e*f - d*g)*(d + e*x)*(c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[2]*Sqrt[a + b
```

```
*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*g^2*(d + e*x)^2*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(3*Sqrt[b]*e^3*E
^((3*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(3/n))
```

Maple [F] time = 0.704, size = 0, normalized size = 0.

$$\int (gx+f)^2 \frac{1}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^2}{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral((f + g*x)**2/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx + f)^2}{\sqrt{b \log\left((ex + d)^n c\right) + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.125 $\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=181

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^2\sqrt{n}}+\frac{\sqrt{\frac{\pi}{2}}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c}}{\sqrt{b}\sqrt{n}}\right.}{\sqrt{b}e^2\sqrt{n}}$$

```
[Out] ((e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b
]*Sqrt[n])])/(Sqrt[b]*e^2*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (g*
Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(Sqrt[b]*e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

Rubi [A] time = 0.272842, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^2\sqrt{n}}+\frac{\sqrt{\frac{\pi}{2}}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c}}{\sqrt{b}\sqrt{n}}\right.}{\sqrt{b}e^2\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] ((e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b
]*Sqrt[n])])/(Sqrt[b]*e^2*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)) + (g*
Sqrt[Pi/2]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(Sqrt[b]*e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx = \int \left(\frac{ef-dg}{e\sqrt{a+b\log(c(d+ex)^n)}} + \frac{g(d+ex)}{e\sqrt{a+b\log(c(d+ex)^n)}}\right) dx$$

$$= \frac{g\int \frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e} + \frac{(ef-dg)\int \frac{1}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{e^2}$$

$$= \frac{\left(g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{n}}}{\sqrt{a+bx}}\,dx, x, \log\left(c(d+ex)^n\right)\right)}{e^2 n} + \frac{\Big((ef-dg)(d+ex)}{}$$

$$= \frac{\left(2g(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\right)\text{Subst}\left(\int e^{-\frac{2a}{bn}+\frac{2x^2}{bn}}\,dx, x, \sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{be^2 n} + \frac{\Big(2(ef-}{}$$

$$= \frac{e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e^2\sqrt{n}} + \frac{e^{-\frac{2a}{bn}}g\sqrt{\frac{\pi}{2}}(d+ex)^2\,(c(d}{}$$

Mathematica [A] time = 0.140126, size = 164, normalized size = 0.91

$$\frac{\sqrt{\pi}e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(2e^{\frac{a}{bn}}(ef-dg)\left(c(d+ex)^n\right)^{\frac{1}{n}}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)+\sqrt{2}g(d+ex)\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right.\right.}{2\sqrt{b}e^2\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*(2*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Erfi[
Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*g*(d + e*x)*Erf
i[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]))/(2*Sqrt[b]*
e^2*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(2/n))
```

Maple [F] time = 0.472, size = 0, normalized size = 0.

$$\int (gx+f)\frac{1}{\sqrt{a+b\ln\left(c\,(ex+d)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx+f}{\sqrt{b\log\left((ex+d)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f+gx}{\sqrt{a+b\log\left(c\,(d+ex)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral((f + g*x)/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx+f}{\sqrt{b\log\left((ex+d)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.126 $\int \frac{1}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=80

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rubi [A] time = 0.0702715, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2389, 2300, 2180, 2204}

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{e}$$
$$= \frac{\left((d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx,x,\log\left(c(d+ex)^n\right)\right)}{en}$$
$$= \frac{\left(2(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx,x,\sqrt{a+b\log\left(c(d+ex)^n\right)}\right)}{ben}$$
$$= \frac{e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

Mathematica [A] time = 0.015635, size = 80, normalized size = 1.

$$\frac{\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{\sqrt{b}e\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])])
/(Sqrt[b]*e*E^(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1))
```

Maple [F] time = 0.061, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a + b\log\left(c\left(d + ex\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*log(c*(d + e*x)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b\log\left((ex + d)^{n}c\right) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.127 $\int \frac{1}{(f+gx)\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi [A] time = 0.0519149, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Defer[Int][1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 0.0802468, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Integrate[1/((f + g*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Maple [A] time = 0.93, size = 0, normalized size = 0.

$$\int \frac{1}{gx+f}\frac{1}{\sqrt{a+b\ln\left(c\,(ex+d)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\sqrt{b\log\left(\left(ex+d\right)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\sqrt{b\log\left(\left(ex+d\right)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

3.128 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=422

$$\frac{6\sqrt{3\pi}g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{6\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}}{b^{3/2}e^4n^{3/2}}$$

```
[Out] (2*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(b^(3/2)*e^4*E^((4*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(4/n)) +
 (6*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((2*a)/(b*n))*n^(3/2)*(c*(
d + e*x)^n)^(2/n)) + (6*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3
]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((3*a)
/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(b*e*n*S
qrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 1.31534, antiderivative size = 422, normalized size of antiderivative = 1., number of steps used = 33, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{6\sqrt{3\pi}g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}}+\frac{6\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right)^{-2/n}}{b^{3/2}e^4n^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```


```
[Out] (2*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[
b]*Sqrt[n])])/(b^(3/2)*e^4*E^((4*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(4/n)) +
 (6*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(
d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((2*a)/(b*n))*n^(3/2)*(c*(
d + e*x)^n)^(2/n)) + (6*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3
]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^4*E^((3*a)
/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(b*e*n*S
qrt[a + b*Log[c*(d + e*x)^n]])
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
+ e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{8\int \frac{(f+gx)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(6(ef-dg))\int \frac{(f+gx)^2}{\sqrt{a+b\log(c(d+ex)^n)}}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{8\int \left(\frac{(ef-dg)^3}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \frac{3g(ef-dg)^2(d+ex)}{e^3\sqrt{a+b\log(c(d+ex)^n)}} + \frac{3g^2(ef-dg)(}{e^3\sqrt{a+b\log(c}}\right.}{bn}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(8g^3)\int \frac{(d+ex)^3}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{be^3n} - \frac{(6g^2(ef-dg))\int \frac{(d+e}{\sqrt{a+b\log(}}}{be^3n}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(8g^3)\,\text{Subst}\left(\int \frac{x^3}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{be^4n} - \frac{(6g^2(ef-d}{}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(8g^3(d+ex)^4\,(c(d+ex)^n)^{-4/n}\right)\text{Subst}\left(\int \frac{e^{\frac{4x}{n}}}{\sqrt{a+bx}}\,dx, x, \text{lo}\right.}{be^4n^2}$$

$$= -\frac{2(d+ex)(f+gx)^3}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(16g^3(d+ex)^4\,(c(d+ex)^n)^{-4/n}\right)\text{Subst}\left(\int e^{-\frac{4a}{bn}+\frac{4x^2}{bn}}\,dx, x\right.}{b^2e^4n^2}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^4n^{3/2}} + \frac{4e^{-\frac{4a}{bn}}g^3\sqrt{\pi}(d+ex}{}$$

Mathematica [B] time = 2.7476, size = 1281, normalized size = 3.04

$$\frac{2\left(2e^{-\frac{4a}{bn}}g^3\sqrt{\pi}(d+ex)^4\text{Erfi}\left(\frac{2\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\sqrt{a+b\log(c(d+ex)^n)}\,(c(d+ex)^n)^{-4/n} - 3de^{-\frac{3a}{bn}}g^3\sqrt{3\pi}(d+ex)^3\text{Erfi}\left(\frac{\sqrt{3}\sqrt{a}}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(-(Sqrt[b]*d*e^3*f^3*Sqrt[n]) - Sqrt[b]*e^4*f^3*Sqrt[n]*x - 3*Sqrt[b]*d*
e^3*f^2*g*Sqrt[n]*x - 3*Sqrt[b]*e^4*f^2*g*Sqrt[n]*x^2 - 3*Sqrt[b]*d*e^3*f*g
^2*Sqrt[n]*x^2 - 3*Sqrt[b]*e^4*f*g^2*Sqrt[n]*x^3 - Sqrt[b]*d*e^3*g^3*Sqrt[n
]*x^3 - Sqrt[b]*e^4*g^3*Sqrt[n]*x^4 - (6*d*e^2*f^2*g*Sqrt[Pi]*(d + e*x)*Erf
i[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e
*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (3*d^2*e*f*g^2*Sqrt[Pi]*(d
+ e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) - (d^3*g^3*Sqrt[Pi]
*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a +
b*Log[c*(d + e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (2*g^3*Sqrt[P
i]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*S
qrt[a + b*Log[c*(d + e*x)^n]])/(E^((4*a)/(b*n))*(c*(d + e*x)^n)^(4/n)) + (3
*e^2*f^2*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^
n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c
*(d + e*x)^n)^(2/n)) - (6*d*e*f*g^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sq
rt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)
^n]])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + (3*d^2*g^3*Sqrt[2*Pi]*(d +
e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) + (3*e
*f*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])
/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((3*a)/(b*n))*(c*(d
+ e*x)^n)^(3/n)) - (3*d*g^3*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b
*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E
```

```
^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)) + (Sqrt[b]*e^3*f^3*Sqrt[n]*(d + e*x)*
Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*
x)^n])/(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (3*Sqrt[b]*d*e^2*f^2
*g*Sqrt[n]*(d + e*x)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-
((a + b*Log[c*(d + e*x)^n])/(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))))
/(b^(3/2)*e^4*n^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F] time = 0.727, size = 0, normalized size = 0.

$$\int (gx+f)^3 \left(a+b\ln\left(c\,(ex+d)^n\right)\right)^{-\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^3}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.129 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=325

$$\frac{4\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{I}}{b^{3/2}e^3n^{3/2}}$$

```
[Out] (2*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((2*a)/(b*n))*n^(3/2)*(c*(d
+ e*x)^n)^(2/n)) + (2*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((3*a)/(b*n))*n^(3/2
)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(b*e*n*Sqrt[a + b*Log[
c*(d + e*x)^n]])
```

Rubi [A] time = 0.869092, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 25, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{4\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}}+\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{I}}{b^{3/2}e^3n^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) +
 (4*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d
+ e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((2*a)/(b*n))*n^(3/2)*(c*(d
+ e*x)^n)^(2/n)) + (2*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*L
og[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(3/2)*e^3*E^((3*a)/(b*n))*n^(3/2
)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(b*e*n*Sqrt[a + b*Log[
c*(d + e*x)^n]])
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{6\int \frac{(f+gx)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(4(ef-dg))\int \frac{f+gx}{\sqrt{a+b\log(c(d+}}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{6\int \left(\frac{(ef-dg)^2}{e^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{2g(ef-dg)(d+ex)}{e^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{g^2(}{e^2\sqrt{a+b\log}}\right.}{bn}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(6g^2)\int \frac{(d+ex)^2}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{be^2n} - \frac{(4g(ef-dg))\int \frac{}{\sqrt{a+b\log}}}{be^2n}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(6g^2)\,\mathrm{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{be^3n} - \frac{(4g(ef}{}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(6g^2(d+ex)^3\,(c(d+ex)^n)^{-3/n}\right)\mathrm{Subst}\left(\int \frac{e^{\frac{3x}{n}}}{\sqrt{a+bx}}\,dx, x\right.}{be^3n^2}$$

$$= -\frac{2(d+ex)(f+gx)^2}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(12g^2(d+ex)^3\,(c(d+ex)^n)^{-3/n}\right)\mathrm{Subst}\left(\int e^{-\frac{3a}{bn}+\frac{3x^2}{bn}}\,d\right.}{b^2e^3n^2}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^3n^{3/2}} + \frac{4e^{-\frac{2a}{bn}}g(ef-dg}{}$$

<u>Mathematica</u> [B] time = 1.37833, size = 828, normalized size = 2.55

$$\frac{2\left(e^{-\frac{3a}{bn}}g^2\sqrt{3\pi}(d+ex)^3\mathrm{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)\sqrt{a+b\log(c(d+ex)^n)}\,(c(d+ex)^n)^{-3/n} - 2de^{-\frac{2a}{bn}}g^2\sqrt{2\pi}(d+ex)^2\mathrm{Erfi}\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(-(Sqrt[b]*d*e^2*f^2*Sqrt[n]) - Sqrt[b]*e^3*f^2*Sqrt[n]*x - 2*Sqrt[b]*d*
e^2*f*g*Sqrt[n]*x - 2*Sqrt[b]*e^3*f*g*Sqrt[n]*x^2 - Sqrt[b]*d*e^2*g^2*Sqrt[
n]*x^2 - Sqrt[b]*e^3*g^2*Sqrt[n]*x^3 - (4*d*e*f*g*Sqrt[Pi]*(d + e*x)*Erfi[S
qrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)
^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (d^2*g^2*Sqrt[Pi]*(d + e*x)*Er
fi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d +
e*x)^n]])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (2*e*f*g*Sqrt[2*Pi]*(d + e
*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt
[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)) - (2*d*
g^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(S
qrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((2*a)/(b*n))*(c*(d + e
*x)^n)^(2/n)) + (g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(E^((3*a)
/(b*n))*(c*(d + e*x)^n)^(3/n)) + (Sqrt[b]*e^2*f^2*Sqrt[n]*(d + e*x)*Gamma[1
/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/
(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)) + (2*Sqrt[b]*d*e*f*g*Sqrt[n]*
(d + e*x)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log
[c*(d + e*x)^n])/(b*n))])/(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1))))/(b^(3/2)*e
^3*n^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F] time = 0.679, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{2} \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{-\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^{2}}{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(f+gx\right)^{2}}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^{2}}{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.130 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=220

$$\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}+\frac{2\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\,\mathrm{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^2n^{3/2}}$$

```
[Out] (2*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(b^(3/2)*e^2*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) + (
2*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(S
qrt[b]*Sqrt[n])])/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(2/n
)) - (2*(d + e*x)*(f + g*x))/(b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.402761, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\,(c(d+ex)^n)^{-1/n}\,\mathrm{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}}+\frac{2\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2\,(c(d+ex)^n)^{-2/n}\,\mathrm{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c}}{\sqrt{b}\sqrt{n}}\right.}{b^{3/2}e^2n^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(b^(3/2)*e^2*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) + (
2*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(S
qrt[b]*Sqrt[n])])/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d + e*x)^n)^(2/n
)) - (2*(d + e*x)*(f + g*x))/(b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{bn} - \frac{(2(ef-dg))\int \frac{1}{\sqrt{a+b\log(c(d+}}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\int\left(\frac{ef-dg}{e\sqrt{a+b\log(c(d+ex)^n)}}+\frac{g(d+ex)}{e\sqrt{a+b\log(c(d+ex)^n)}}\right)dx}{bn} - (2(e$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(4g)\int \frac{d+ex}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{ben} + \frac{(4(ef-dg))\int \frac{1}{\sqrt{a+b\log(}}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{(4g)\,\mathrm{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cx^n)}}\,dx, x, d+ex\right)}{be^2n} + (4(ef-$$

$$= -\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}} - \frac{2(d+ex)(}{ben\sqrt{a+b\log}}$$

$$= -\frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}} - \frac{2(d+ex)(}{ben\sqrt{a+b\log}}$$

$$= \frac{2e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}e^2n^{3/2}} + \frac{2e^{-\frac{2a}{bn}}g\sqrt{2\pi}(d+}{}$$

Mathematica [A] time = 0.807175, size = 338, normalized size = 1.54

$$2e^{-\frac{2a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-2/n}\left(\sqrt{b}\sqrt{n}e^{\frac{a}{bn}}\left(c(d+ex)^n\right)^{\frac{1}{n}}\left((dg+ef)\sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)-ee^{\frac{a}{bn}}(f\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] (2*(d + e*x)*(-2*d*E^(a/(b*n))*g*Sqrt[Pi]*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[
a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]]
 + g*Sqrt[2*Pi]*(d + e*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])]*Sqrt[a + b*Log[c*(d + e*x)^n]] + Sqrt[b]*E^(a/(b*n))*Sqrt[n
]*(c*(d + e*x)^n)^n^(-1)*(-(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(f + g*x))
 + (e*f + d*g)*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a +
b*Log[c*(d + e*x)^n])/(b*n))])))/(b^(3/2)*e^2*E^((2*a)/(b*n))*n^(3/2)*(c*(d
 + e*x)^n)^(2/n)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F] time = 0.466, size = 0, normalized size = 0.

$$\int (gx+f)\left(a+b\ln\left(c(ex+d)^n\right)\right)^{-\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx+f}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f + gx}{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((f + g*x)/(a + b*log(c*(d + e*x)**n))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx + f}{\left(b\log\left((ex + d)^{n}c\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.131 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.0952645, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{2\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}}-\frac{2(d+ex)}{ben\sqrt{a+b\log\left(c(d+ex)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(b^(3/2)*e*E^(a/(b*n))*n^(3/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))/(
b*e*n*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
```

```
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx,x,d+ex\right)}{e}$$
$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cx^n)}}\,dx,x,d+ex\right)}{ben}$$
$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(2(d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{n}}}{\sqrt{a+bx}}\,dx,x,\log\right.}{ben^2}$$
$$= -\frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(4(d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int e^{-\frac{a}{bn}+\frac{x^2}{bn}}\,dx,x,\right.}{b^2en^2}$$
$$= \frac{2e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{3/2}en^{3/2}} - \frac{2(d+ex)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Mathematica [A] time = 0.0837573, size = 139, normalized size = 1.2

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}} - \sqrt{-\frac{a+b\log(c(d+ex)^n)}{bn}}\,\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)\right)}{ben\sqrt{a+b\log(c(d+ex)^n)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-3/2),x]
```

```
[Out] (-2*(d + e*x)*(E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1) - Gamma[1/2, -((a + b*Log
[c*(d + e*x)^n])/(b*n))]*Sqrt[-((a + b*Log[c*(d + e*x)^n])/(b*n))]))/(b*e*E
^(a/(b*n))*n*(c*(d + e*x)^n)^n^(-1)*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(ex+d\right)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b \log \left(c \left(d + ex\right)^{n}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b \log \left(\left(ex + d\right)^{n} c\right) + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-3/2), x)
```

3.132 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^{3/2}},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]
```

Rubi [A] time = 0.060626, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^{3/2}}\,dx = \int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^{3/2}}\,dx$$

Mathematica [A] time = 0.248027, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(3/2)), x]
```

Maple [A] time = 0.936, size = 0, normalized size = 0.

$$\int \frac{1}{gx+f}\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^{\frac{3}{2}}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**(3/2)*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(3/2)), x)
```

3.133 $\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=520

$$\frac{12\sqrt{3\pi}g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^4n^{5/2}}+\frac{8\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right.}{b^{5/2}e^4n^{5/2}}$$

```
[Out] (4*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (32*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^((4*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(4/
n)) + (8*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^((2*a)/(b*n))*n^(5/2)
*(c*(d + e*x)^n)^(2/n)) + (12*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(
Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^
((3*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(3
*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) + (4*(e*f - d*g)*(d + e*x)*(f + g*
x)^2)/(b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (16*(d + e*x)*(f + g*x
)^3)/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 2.33263, antiderivative size = 520, normalized size of antiderivative = 1., number of steps used = 59, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{12\sqrt{3\pi}g^2e^{-\frac{3a}{bn}}(d+ex)^3(ef-dg)\left(c(d+ex)^n\right)^{-3/n}\operatorname{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^4n^{5/2}}+\frac{8\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)^2\left(c(d+ex)^n\right.}{b^{5/2}e^4n^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```


```
[Out] (4*(e*f - d*g)^3*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (32*g^3*Sqrt[Pi]*(d + e*x)^4*Erfi[(2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^4*E^((4*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(4/
n)) + (8*g*(e*f - d*g)^2*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Lo
g[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^((2*a)/(b*n))*n^(5/2)
*(c*(d + e*x)^n)^(2/n)) + (12*g^2*(e*f - d*g)*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(
Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^4*E^
((3*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^3)/(3
*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) + (4*(e*f - d*g)*(d + e*x)*(f + g*
x)^2)/(b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (16*(d + e*x)*(f + g*x
)^3)/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{5/2}}dx = -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8\int \frac{(f+gx)^3}{(a+b\log(c(d+ex)^n))^{3/2}}dx}{3bn} - \frac{(2(ef-dg))\int \frac{}{(a+b\log}}{ben}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{16(d+ex)}{3b^2en^2\sqrt{a+b\log}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{16(d+ex)}{3b^2en^2\sqrt{a+b\log}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{16(d+ex)}{3b^2en^2\sqrt{a+b\log}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{16(d+ex)}{3b^2en^2\sqrt{a+b\log}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{16(d+ex)}{3b^2en^2\sqrt{a+b\log}}$$

$$= -\frac{2(d+ex)(f+gx)^3}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)(f+gx)^2}{b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{16(d+ex)}{3b^2en^2\sqrt{a+b\log}}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)^3\sqrt{\pi}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^4n^{5/2}} + \frac{32e^{-\frac{4a}{bn}}g^3\sqrt{\pi}(d}{}$$

Mathematica [B] time = 7.00728, size = 2647, normalized size = 5.09

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (8*f^2*g*Sqrt[Pi]*(-2*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))
/(b*n))*Erfi[Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d +
e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e
*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqrt
[a + b*Log[c*(d + e*x)^n]])/(b^(5/2)*e^2*E^((2*(a + b*(-(n*Log[d + e*x]) +
Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log
[d + e*x]) + Log[c*(d + e*x)^n])]) + (20*d*f*g^2*Sqrt[Pi]*(-2*d*E^((a + b*(
-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*Erfi[Sqrt[a + b*n*Log[d + e
*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Sqrt
[2]*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*
(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqrt[a + b*Log[c*(d + e*x)^n]])/(b^(5/2
)*e^3*E^((2*(a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*n^(5/2
)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])
+ (4*d^2*g^3*Sqrt[Pi]*(-2*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^
n]))/(b*n))*Erfi[Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(
d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Sqrt[2]*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d
 + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*
Sqrt[a + b*Log[c*(d + e*x)^n]])/(b^(5/2)*e^4*E^((2*(a + b*(-(n*Log[d + e*x]
) + Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n
*Log[d + e*x]) + Log[c*(d + e*x)^n])]) + (12*f*g^2*Sqrt[Pi]*(3*d^2*E^((2*(a
 + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*Erfi[Sqrt[a + b*n*Lo
g[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])]
```

```
 - 3*Sqrt[2]*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*E
rfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d +
e*x)^n])])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*Erfi[(Sqrt[3]*Sqrt[a + b*n*Log[d +
e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqr
t[a + b*Log[c*(d + e*x)^n]])/(b^(5/2)*e^3*E^((3*(a + b*(-(n*Log[d + e*x]) +
 Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Lo
g[d + e*x]) + Log[c*(d + e*x)^n])]) + (28*d*g^3*Sqrt[Pi]*(3*d^2*E^((2*(a +
b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*Erfi[Sqrt[a + b*n*Log[d
 + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] -
3*Sqrt[2]*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*Erfi
[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x
)^n])])/(Sqrt[b]*Sqrt[n])] + Sqrt[3]*Erfi[(Sqrt[3]*Sqrt[a + b*n*Log[d + e*x
] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])])*Sqrt[a
 + b*Log[c*(d + e*x)^n]])/(3*b^(5/2)*e^4*E^((3*(a + b*(-(n*Log[d + e*x]) +
Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log
[d + e*x]) + Log[c*(d + e*x)^n])]) + (32*g^3*Sqrt[Pi]*(-2*d^3*E^((3*(a + b*
(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*Erfi[Sqrt[a + b*n*Log[d +
 e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]/(Sqrt[b]*Sqrt[n])] + Er
fi[(2*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]
)])/(Sqrt[b]*Sqrt[n])] + d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n
]))/(b*n))*(3*Sqrt[2]*d*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))
/(b*n))*Erfi[(Sqrt[2]*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Lo
g[c*(d + e*x)^n])])/(Sqrt[b]*Sqrt[n])] - 2*Sqrt[3]*Erfi[(Sqrt[3]*Sqrt[a + b
*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])])/(Sqrt[b]*Sqr
t[n])]))*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*b^(5/2)*e^4*E^((4*(a + b*(-(n*L
og[d + e*x]) + Log[c*(d + e*x)^n])))/(b*n))*n^(5/2)*Sqrt[a + b*n*Log[d + e*
x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]) + (4*f^3*Gamma[1/2, -((a
+ b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))]*Sq
rt[-((a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b
*n))])/(3*b^2*e*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*
n^2*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]
) + (12*d*f^2*g*Gamma[1/2, -((a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) +
 Log[c*(d + e*x)^n]))/(b*n))]*Sqrt[-((a + b*n*Log[d + e*x] + b*(-(n*Log[d +
 e*x]) + Log[c*(d + e*x)^n]))/(b*n))])/(b^2*e^2*E^((a + b*(-(n*Log[d + e*x]
) + Log[c*(d + e*x)^n]))/(b*n))*n^2*Sqrt[a + b*n*Log[d + e*x] + b*(-(n*Log[
d + e*x]) + Log[c*(d + e*x)^n])]) + (8*d^2*f*g^2*Gamma[1/2, -((a + b*n*Log[
d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))]*Sqrt[-((a +
b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))])/(b^
2*e^3*E^((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))/(b*n))*n^2*Sqrt[a
 + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]) + Sqrt[a
 + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])]*((-2*(d +
 e*x)*(f + g*x)^3)/(3*b*e*n*(a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) +
Log[c*(d + e*x)^n]))^2) - (4*(d + e*x)*(f + g*x)^2*(e*f + 3*d*g + 4*e*g*x))
/(3*b^2*e^2*n^2*(a + b*n*Log[d + e*x] + b*(-(n*Log[d + e*x]) + Log[c*(d + e
*x)^n]))))
```

Maple [F] time = 0.781, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{3} \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)^3/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^3}{\left(a+b\log\left(c\,(d+ex)^n\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((f + g*x)**3/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.134 $\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=421

$$\frac{16\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{Er}}{3b^{5/2}e^3n^{5/2}}$$

```
[Out] (4*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (16*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^((2*a)/(b*n))*n^(5/2)*(
c*(d + e*x)^n)^(2/n)) + (4*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a
+ b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^3*E^((3*a)/(b*n))*n
^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(3*b*e*n*(a + b*L
og[c*(d + e*x)^n])^(3/2)) + (8*(e*f - d*g)*(d + e*x)*(f + g*x))/(3*b^2*e^2*
n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (4*(d + e*x)*(f + g*x)^2)/(b^2*e*n^2*
Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 1.39878, antiderivative size = 421, normalized size of antiderivative = 1., number of steps used = 41, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310}

$$\frac{16\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}}+\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)^2\left(c(d+ex)^n\right)^{-1/n}\,\mathrm{Er}}{3b^{5/2}e^3n^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)^2*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sq
rt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1))
 + (16*g*(e*f - d*g)*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*
(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^3*E^((2*a)/(b*n))*n^(5/2)*(
c*(d + e*x)^n)^(2/n)) + (4*g^2*Sqrt[3*Pi]*(d + e*x)^3*Erfi[(Sqrt[3]*Sqrt[a
+ b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])])/(b^(5/2)*e^3*E^((3*a)/(b*n))*n
^(5/2)*(c*(d + e*x)^n)^(3/n)) - (2*(d + e*x)*(f + g*x)^2)/(3*b*e*n*(a + b*L
og[c*(d + e*x)^n])^(3/2)) + (8*(e*f - d*g)*(d + e*x)*(f + g*x))/(3*b^2*e^2*
n^2*Sqrt[a + b*Log[c*(d + e*x)^n]]) - (4*(d + e*x)*(f + g*x)^2)/(b^2*e*n^2*
Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
+ e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)^2}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{2\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{3/2}}dx}{bn} - \frac{(4(ef-dg))\int \frac{f+g}{(a+b\log(c(d}}{3ben}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{4(d+ex)(f}{b^2en^2\sqrt{a+b\log(}}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{4(d+ex)(f}{b^2en^2\sqrt{a+b\log(}}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{4(d+ex)(f}{b^2en^2\sqrt{a+b\log(}}$$

$$= -\frac{2(d+ex)(f+gx)^2}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{8(ef-dg)(d+ex)(f+gx)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{4(d+ex)(f}{b^2en^2\sqrt{a+b\log(}}$$

$$= \frac{8e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}} - \frac{2(d+ex)(f}{3ben(a+b\log(c(}}$$

$$= \frac{8e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}} - \frac{2(d+ex)(f}{3ben(a+b\log(c(}}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)^2\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^3n^{5/2}} + \frac{16e^{-\frac{2a}{bn}}g(ef-dg)}{}$$

Mathematica [A] time = 4.52702, size = 527, normalized size = 1.25

$$-\frac{2e^{-\frac{3a}{bn}}(d+ex)(c(d+ex)^n)^{-3/n}\left(\sqrt{b}\sqrt{n}e^{\frac{2a}{bn}}(c(d+ex)^n)^{2/n}\left(2bn\left(2d^2g^2+6defg+e^2f^2\right)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\operatorname{Gamma}\left(\frac{1}{2},-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*d*E^((2*a)/(b*n))*g*(8*e*f + d*g)*Sqrt[Pi]*(c*(d + e*x)^n)
^(2/n)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])]*(a + b*Log[c*
(d + e*x)^n])^(3/2) + 8*E^(a/(b*n))*g*(-(e*f) + d*g)*Sqrt[2*Pi]*(d + e*x)*(
c*(d + e*x)^n)^n^(-1)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b
]*Sqrt[n])]*(a + b*Log[c*(d + e*x)^n])^(3/2) - 6*g^2*Sqrt[3*Pi]*(d + e*x)^2
*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])]*(a + b*Lo
g[c*(d + e*x)^n])^(3/2) + Sqrt[b]*E^((2*a)/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^(
2/n)*(2*b*(e^2*f^2 + 6*d*e*f*g + 2*d^2*g^2)*n*Gamma[1/2, -((a + b*Log[c*(d
+ e*x)^n])/(b*n))]*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + e*E^(a/(b*
n))*(c*(d + e*x)^n)^n^(-1)*(f + g*x)*(b*e*n*(f + g*x) + 2*a*(e*f + 2*d*g +
3*e*g*x) + 2*b*(2*d*g + e*(f + 3*g*x))*Log[c*(d + e*x)^n]))))/(3*b^(5/2)*e^
3*E^((3*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^(3/n)*(a + b*Log[c*(d + e*x)^n])^
(3/2))
```

Maple [F] time = 0.681, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{2}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{-\frac{5}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)^2/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2}{(b\log((ex+d)^n c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(f+gx)^2}{(a+b\log(c(d+ex)^n))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Integral((f + g*x)**2/(a + b*log(c*(d + e*x)**n))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2}{(b\log((ex+d)^n c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.135 $\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=311

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{8\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}$$

```
[Out] (4*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) +
 (8*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/
(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^
(2/n)) - (2*(d + e*x)*(f + g*x))/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2))
 + (4*(e*f - d*g)*(d + e*x))/(3*b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
 - (8*(d + e*x)*(f + g*x))/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.563848, antiderivative size = 311, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2297}

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\text{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}+\frac{8\sqrt{2\pi}ge^{-\frac{2a}{bn}}(d+ex)^2\left(c(d+ex)^n\right)^{-2/n}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (4*(e*f - d*g)*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt
[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) +
 (8*g*Sqrt[2*Pi]*(d + e*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/
(Sqrt[b]*Sqrt[n])])/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)^
(2/n)) - (2*(d + e*x)*(f + g*x))/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2))
 + (4*(e*f - d*g)*(d + e*x))/(3*b^2*e^2*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
 - (8*(d + e*x)*(f + g*x))/(3*b^2*e*n^2*Sqrt[a + b*Log[c*(d + e*x)^n]])
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rubi steps

$$\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = -\frac{2(d+ex)(f+gx)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4\int \frac{f+gx}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx}{3bn} - \frac{(2(ef-dg))\int \frac{1}{(a+b\log(c(\ldots}}{3ben}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} - \frac{8(d+ex)(f+gx)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{16\int \frac{f+gx}{\sqrt{a+b\log(c(d+ex\ldots}}}{3b^2n^2}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{8(d+ex)(f\ldots}{3b^2en^2\sqrt{a+b\log\ldots}}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{8(d+ex)(f\ldots}{3b^2en^2\sqrt{a+b\log\ldots}}$$

$$= -\frac{2(d+ex)(f+gx)}{3ben\,(a+b\log(c(d+ex)^n))^{3/2}} + \frac{4(ef-dg)(d+ex)}{3b^2e^2n^2\sqrt{a+b\log(c(d+ex)^n)}} - \frac{8(d+ex)(f\ldots}{3b^2en^2\sqrt{a+b\log\ldots}}$$

$$= -\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^2n^{5/2}} - \frac{2(d+ex)(f\ldots}{3ben\,(a+b\log(c\ldots}$$

$$= -\frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{b^{5/2}e^2n^{5/2}} - \frac{2(d+ex)(f\ldots}{3ben\,(a+b\log(c\ldots}$$

$$= \frac{4e^{-\frac{a}{bn}}(ef-dg)\sqrt{\pi}(d+ex)\,(c(d+ex)^n)^{-1/n}\operatorname{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}e^2n^{5/2}} + \frac{8e^{-\frac{2a}{bn}}g\sqrt{2\pi}(d+ex\ldots}{\ldots}$$

Mathematica [A] time = 1.90654, size = 353, normalized size = 1.14

$$\frac{2e^{-\frac{2a}{bn}}(d+ex)\,(c(d+ex)^n)^{-2/n}\left(-\frac{\sqrt{b}\sqrt{n}e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}\left(2bn(3dg+ef)\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)+e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}\left(2a(dg+e\ldots\right.\right.}{(a+b\log(c(d+ex)^n))^{3/2}}\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*Log[c*(d + e*x)^n])^(5/2),x]
```

```
[Out] (2*(d + e*x)*(-8*d*E^(a/(b*n))*g*Sqrt[Pi]*(c*(d + e*x)^n)^n^(-1)*Erfi[Sqrt[
a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])] + 4*g*Sqrt[2*Pi]*(d + e*x)*Erf
i[(Sqrt[2]*Sqrt[a + b*Log[c*(d + e*x)^n]])/(Sqrt[b]*Sqrt[n])] - (Sqrt[b]*E^
(a/(b*n))*Sqrt[n]*(c*(d + e*x)^n)^n^(-1)*(2*b*(e*f + 3*d*g)*n*Gamma[1/2, -(
(a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^(3
/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(b*e*n*(f + g*x) + 2*a*(e*f + d*g
+ 2*e*g*x) + 2*b*(d*g + e*(f + 2*g*x))*Log[c*(d + e*x)^n])))/(a + b*Log[c*(
d + e*x)^n])^(3/2)))/(3*b^(5/2)*e^2*E^((2*a)/(b*n))*n^(5/2)*(c*(d + e*x)^n)
^(2/n))
```

Maple [F] time = 0.474, size = 0, normalized size = 0.

$$\int (gx+f)\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int((g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx + f}{\left(b \log\left((ex + d)^n c\right) + a\right)^{\frac{5}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{gx + f}{\left(b \log\left((ex + d)^n c\right) + a\right)^{\frac{5}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)/(b*log((e*x + d)^n*c) + a)^(5/2), x)
```

3.136 $\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=156

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```

Rubi [A] time = 0.117013, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2389, 2297, 2300, 2180, 2204}

$$\frac{4\sqrt{\pi}e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}}-\frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log\left(c(d+ex)^n\right)}}-\frac{2(d+ex)}{3ben\left(a+b\log\left(c(d+ex)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```


```
[Out] (4*Sqrt[Pi]*(d + e*x)*Erfi[Sqrt[a + b*Log[c*(d + e*x)^n]]/(Sqrt[b]*Sqrt[n])
])/(3*b^(5/2)*e*E^(a/(b*n))*n^(5/2)*(c*(d + e*x)^n)^n^(-1)) - (2*(d + e*x))
/(3*b*e*n*(a + b*Log[c*(d + e*x)^n])^(3/2)) - (4*(d + e*x))/(3*b^2*e*n^2*Sq
rt[a + b*Log[c*(d + e*x)^n]])
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rubi steps

$$\int \frac{1}{(a+b\log(c(d+ex)^n))^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^{3/2}}\,dx, x, d+ex\right)}{3ben}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{4\,\text{Subst}\left(\int \frac{}{\sqrt{a+}}\right.}{}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(4(d+ex)(c(d\right.}{}$$

$$= -\frac{2(d+ex)}{3ben(a+b\log(c(d+ex)^n))^{3/2}} - \frac{4(d+ex)}{3b^2en^2\sqrt{a+b\log(c(d+ex)^n)}} + \frac{\left(8(d+ex)(c(d\right.}{}$$

$$= \frac{4e^{-\frac{a}{bn}}\sqrt{\pi}(d+ex)(c(d+ex)^n)^{-1/n}\,\text{erfi}\left(\frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{b}\sqrt{n}}\right)}{3b^{5/2}en^{5/2}} - \frac{2(d+ex)}{3ben(a+b\log(c(d+ex)}$$

Mathematica [A] time = 0.168844, size = 163, normalized size = 1.04

$$-\frac{2e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\left(2bn\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log(c(d+ex)^n)}{bn}\right)+e^{\frac{a}{bn}}(c(d+ex)^n)^{\frac{1}{n}}(2a+2b\,\text{lo}\right.}{3b^2en^2(a+b\log(c(d+ex)^n))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^(-5/2),x]
```

```
[Out] (-2*(d + e*x)*(2*b*n*Gamma[1/2, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(-((a
+ b*Log[c*(d + e*x)^n])/(b*n)))^(3/2) + E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*
(2*a + b*n + 2*b*Log[c*(d + e*x)^n])))/(3*b^2*e*E^(a/(b*n))*n^2*(c*(d + e*x
)^n)^n^(-1)*(a + b*Log[c*(d + e*x)^n])^(3/2))
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(-5/2), x)
```

3.137 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^{5/2}}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^{5/2}},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

Rubi [A] time = 0.0587893, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^{5/2}}\,dx=\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^{5/2}}\,dx$$

Mathematica [A] time = 0.552144, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\,(a+b\log(c(d+ex)^n))^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^(5/2)), x]
```

Maple [A] time = 0.97, size = 0, normalized size = 0.

$$\int \frac{1}{gx+f}\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^(5/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^(5/2)), x)
```

3.138 $\int (f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)dx$

Optimal. Leaf size=163

$$\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{4bn\sqrt{f+gx}(ef-dg)^2}{5e^2g}+\frac{4bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5e^{5/2}g}-\frac{4bn(f+gx)^{3/2}(e}{15eg}$$

```
[Out] (-4*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(5*e^2*g) - (4*b*(e*f - d*g)*n*(f + g*
x)^(3/2))/(15*e*g) - (4*b*n*(f + g*x)^(5/2))/(25*g) + (4*b*(e*f - d*g)^(5/2
)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```

Rubi [A] time = 0.163095, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 50, 63, 208}

$$\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g}-\frac{4bn\sqrt{f+gx}(ef-dg)^2}{5e^2g}+\frac{4bn(ef-dg)^{5/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5e^{5/2}g}-\frac{4bn(f+gx)^{3/2}(e}{15eg}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]),x]
```


```
[Out] (-4*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(5*e^2*g) - (4*b*(e*f - d*g)*n*(f + g*
x)^(3/2))/(15*e*g) - (4*b*n*(f + g*x)^(5/2))/(25*g) + (4*b*(e*f - d*g)^(5/2
)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*g)
```


Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int (f+gx)^{3/2}(a+b\log(c(d+ex)^n))\,dx = \frac{2(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{5g} - \frac{(2ben)\int \frac{(f+gx)^{5/2}}{d+ex}\,dx}{5g}$$

$$= -\frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{5g} - \frac{(2b(ef-dg)n)\int \frac{(f+}{d}}{5g}$$

$$= -\frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+gx)^{5/2}(a+b\log(c(d+ex}{5g}$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+}{}$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g} + \frac{2(f+}{}$$

$$= -\frac{4b(ef-dg)^2n\sqrt{f+gx}}{5e^2g} - \frac{4b(ef-dg)n(f+gx)^{3/2}}{15eg} - \frac{4bn(f+gx)^{5/2}}{25g} + \frac{4b(ef}{}$$

Mathematica [A] time = 0.221988, size = 137, normalized size = 0.84

$$\frac{2\left((f+gx)^{5/2}(a+b\log(c(d+ex)^n)) - \frac{2bn(ef-dg)\left(\sqrt{e}\sqrt{f+gx}(-3dg+4ef+egx)-3(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\right)}{3e^{5/2}} - \frac{2}{5}bn(f+gx)^{5/2}\right)}{5g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*((-2*b*n*(f + g*x)^(5/2))/5 - (2*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*
(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x
])/Sqrt[e*f - d*g]]))/(3*e^(5/2)) + (f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^
n])))/(5*g)
```

Maple [F] time = 1.185, size = 0, normalized size = 0.

$$\int (gx+f)^{\frac{3}{2}}\left(a+b\ln\left(c(ex+d)^n\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.98157, size = 1207, normalized size = 7.4

$$\left[\frac{2\left(15\left(be^2f^2-2\,bdefg+bd^2g^2\right)n\sqrt{\frac{ef-dg}{e}}\log\left(\frac{egx+2\,ef-dg+2\,\sqrt{gx+f}e\sqrt{\frac{ef-dg}{e}}}{ex+d}\right)+\left(15\,ae^2f^2-3\left(2\,be^2g^2n-5\,ae^2g^2\right)x^2-2\left(2\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] [2/75*(15*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*sqrt((e*f - d*g)/e)*log((
e*g*x + 2*e*f - d*g + 2*sqrt(g*x + f)*e*sqrt((e*f - d*g)/e))/(e*x + d)) + (
15*a*e^2*f^2 - 3*(2*b*e^2*g^2*n - 5*a*e^2*g^2)*x^2 - 2*(23*b*e^2*f^2 - 35*b
*d*e*f*g + 15*b*d^2*g^2)*n + 2*(15*a*e^2*f*g - (11*b*e^2*f*g - 5*b*d*e*g^2)
*n)*x + 15*(b*e^2*g^2*n*x^2 + 2*b*e^2*f*g*n*x + b*e^2*f^2*n)*log(e*x + d) +
 15*(b*e^2*g^2*x^2 + 2*b*e^2*f*g*x + b*e^2*f^2)*log(c))*sqrt(g*x + f))/(e^2
*g), 2/75*(30*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*sqrt(-(e*f - d*g)/e)*
arctan(-sqrt(g*x + f)*e*sqrt(-(e*f - d*g)/e)/(e*f - d*g)) + (15*a*e^2*f^2 -
 3*(2*b*e^2*g^2*n - 5*a*e^2*g^2)*x^2 - 2*(23*b*e^2*f^2 - 35*b*d*e*f*g + 15*
b*d^2*g^2)*n + 2*(15*a*e^2*f*g - (11*b*e^2*f*g - 5*b*d*e*g^2)*n)*x + 15*(b*
e^2*g^2*n*x^2 + 2*b*e^2*f*g*n*x + b*e^2*f^2*n)*log(e*x + d) + 15*(b*e^2*g^2
*x^2 + 2*b*e^2*f*g*x + b*e^2*f^2)*log(c))*sqrt(g*x + f))/(e^2*g)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{\frac{3}{2}}\left(b\log\left(\left(ex+d\right)^n c\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")

[Out] integrate((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a), x)
```

3.139 $\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=132

$$\frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g}+\frac{4bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}-\frac{4bn\sqrt{f+gx}(ef-dg)}{3eg}-\frac{4bn(f+gx)^{3/2}}{9g}$$

```
[Out] (-4*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e*g) - (4*b*n*(f + g*x)^(3/2))/(9*g)
+ (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/(3*e^(3/2)*g) + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rubi [A] time = 0.0854166, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 50, 63, 208}

$$\frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g}+\frac{4bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g}-\frac{4bn\sqrt{f+gx}(ef-dg)}{3eg}-\frac{4bn(f+gx)^{3/2}}{9g}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-4*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e*g) - (4*b*n*(f + g*x)^(3/2))/(9*g)
+ (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/(3*e^(3/2)*g) + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*g)
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))\,dx = \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g} - \frac{(2ben)\int \frac{(f+gx)^{3/2}}{d+ex}\,dx}{3g}$$

$$= -\frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g} - \frac{(2b(ef-dg)n)\int \frac{\sqrt{f+g}}{d+ex}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{3g}$$

$$= -\frac{4b(ef-dg)n\sqrt{f+gx}}{3eg} - \frac{4bn(f+gx)^{3/2}}{9g} + \frac{4b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3e^{3/2}g} +$$

Mathematica [A] time = 0.12709, size = 118, normalized size = 0.89

$$\frac{2\left(\sqrt{e}\sqrt{f+gx}\left(3ae(f+gx)+3be(f+gx)\log(c(d+ex)^n)-2bn(-3dg+4ef+egx)\right)+6bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\right)}{9e^{3/2}g}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*(6*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]
] + Sqrt[e]*Sqrt[f + g*x]*(3*a*e*(f + g*x) - 2*b*n*(4*e*f - 3*d*g + e*g*x)
+ 3*b*e*(f + g*x)*Log[c*(d + e*x)^n])))/(9*e^(3/2)*g)
```

Maple [F] time = 1.127, size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.87348, size = 728, normalized size = 5.52

$$\left[-\frac{2\left(3\left(bef-bdg\right)n\sqrt{\frac{ef-dg}{e}}\log\left(\frac{egx+2\,ef-dg-2\,\sqrt{gx+f}e\sqrt{\frac{ef-dg}{e}}}{ex+d}\right)-\left(3\,aef-2\left(4\,bef-3\,bdg\right)n-\left(2\,begn-3\,aeg\right)x+3\left(begr\right.\right.\right.}{9\,eg}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] [-2/9*(3*(b*e*f - b*d*g)*n*sqrt((e*f - d*g)/e)*log((e*g*x + 2*e*f - d*g - 2
*sqrt(g*x + f)*e*sqrt((e*f - d*g)/e))/(e*x + d)) - (3*a*e*f - 2*(4*b*e*f -
3*b*d*g)*n - (2*b*e*g*n - 3*a*e*g)*x + 3*(b*e*g*n*x + b*e*f*n)*log(e*x + d)
 + 3*(b*e*g*x + b*e*f)*log(c))*sqrt(g*x + f))/(e*g), 2/9*(6*(b*e*f - b*d*g)
*n*sqrt(-(e*f - d*g)/e)*arctan(-sqrt(g*x + f)*e*sqrt(-(e*f - d*g)/e)/(e*f -
 d*g)) + (3*a*e*f - 2*(4*b*e*f - 3*b*d*g)*n - (2*b*e*g*n - 3*a*e*g)*x + 3*(
b*e*g*n*x + b*e*f*n)*log(e*x + d) + 3*(b*e*g*x + b*e*f)*log(c))*sqrt(g*x +
f))/(e*g)]
```

Sympy [A] time = 4.52447, size = 139, normalized size = 1.05

$$\frac{2\left(\frac{a\left(f+gx\right)^{\frac{3}{2}}}{3}+b\left(-\frac{2en\left(\frac{g\left(f+gx\right)^{\frac{3}{2}}}{3e}+\frac{\sqrt{f+gx}\left(-dg^{2}+efg\right)}{e^{2}}+\frac{g\left(dg-ef\right)^{2}\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{dg-ef}{e}}}\right)}{e^{3}\sqrt{\frac{dg-ef}{e}}}\right)}{3g}+\frac{\left(f+gx\right)^{\frac{3}{2}}\log\left(c\left(d-\frac{ef}{g}+\frac{e\left(f+gx\right)}{g}\right)^{n}\right)}{3}\right)\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] 2*(a*(f + g*x)**(3/2)/3 + b*(-2*e*n*(g*(f + g*x)**(3/2)/(3*e) + sqrt(f + g*
x)*(-d*g**2 + e*f*g)/e**2 + g*(d*g - e*f)**2*atan(sqrt(f + g*x)/sqrt((d*g -
 e*f)/e))/(e**3*sqrt((d*g - e*f)/e)))/(3*g) + (f + g*x)**(3/2)*log(c*(d - e
*f/g + e*(f + g*x)/g)**n)/3))/g
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a), x)
```

3.140 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=97

$$\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}+\frac{4bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g}-\frac{4bn\sqrt{f+gx}}{g}$$

```
[Out] (-4*b*n*Sqrt[f + g*x])/g + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e
*x)^n]))/g
```

Rubi [A] time = 0.0586838, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 50, 63, 208}

$$\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}+\frac{4bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g}-\frac{4bn\sqrt{f+gx}}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x],x]
```

```
[Out] (-4*b*n*Sqrt[f + g*x])/g + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e
*x)^n]))/g
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}}\,dx = \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} - \frac{(2ben)\int \frac{\sqrt{f+gx}}{d+ex}\,dx}{g}$$
$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} - \frac{(2b(ef-dg)n)\int \frac{1}{(d+ex)\sqrt{f+gx}}\,dx}{g}$$
$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} - \frac{(4b(ef-dg)n)\,\text{Subst}\left(\int \frac{1}{d-\frac{ef}{g}+\frac{ex^2}{g}}\,dx,\right.}{g^2}$$
$$= -\frac{4bn\sqrt{f+gx}}{g} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}$$

Mathematica [A] time = 0.0799041, size = 83, normalized size = 0.86

$$\frac{2\left(\sqrt{f+gx}\,(a+b\log(c(d+ex)^n)-2bn)+\frac{2bn\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x],x]
```

```
[Out] (2*((2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)/Sqrt[e] + Sqrt[f + g*x]*(a - 2*b*n + b*Log[c*(d + e*x)^n])))/g
```

Maple [A] time = 0.331, size = 148, normalized size = 1.5

$$2\frac{\sqrt{gx+f}a}{g}+2\frac{b\sqrt{gx+f}}{g}\ln\left(c\left(\frac{(gx+f)e+dg-fe}{g}\right)^n\right)-4\frac{bn\sqrt{gx+f}}{g}+4\frac{bdn}{\sqrt{(dg-fe)e}}\arctan\left(\frac{\sqrt{gx+f}e}{\sqrt{(dg-fe)e}}\right)-4\frac{}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)
```

```
[Out] 2/g*(g*x+f)^(1/2)*a+2/g*b*ln(c*(((g*x+f)*e+d*g-f*e)/g)^n)*(g*x+f)^(1/2)-4*b
*n*(g*x+f)^(1/2)/g+4*b*n/((d*g-e*f)*e)^(1/2)*arctan((g*x+f)^(1/2)*e/((d*g-e
*f)*e)^(1/2))*d-4/g*b*e*n/((d*g-e*f)*e)^(1/2)*arctan((g*x+f)^(1/2)*e/((d*g-
e*f)*e)^(1/2))*f
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.92591, size = 432, normalized size = 4.45

$$\left[\frac{2\left(bn\sqrt{\frac{ef-dg}{e}}\log\left(\frac{egx+2\,ef-dg+2\,\sqrt{gx+f}e\sqrt{\frac{ef-dg}{e}}}{ex+d}\right)+(bn\log(ex+d)-2\,bn+b\log(c)+a)\sqrt{gx+f}\right)}{g}, \frac{2\left(2\,bn\sqrt{-\frac{ef-dg}{e}}\,\mathrm{arct}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] [2*(b*n*sqrt((e*f - d*g)/e)*log((e*g*x + 2*e*f - d*g + 2*sqrt(g*x + f)*e*sq
rt((e*f - d*g)/e))/(e*x + d)) + (b*n*log(e*x + d) - 2*b*n + b*log(c) + a)*s
qrt(g*x + f))/g, 2*(2*b*n*sqrt(-(e*f - d*g)/e)*arctan(-sqrt(g*x + f)*e*sqrt
(-(e*f - d*g)/e)/(e*f - d*g)) + (b*n*log(e*x + d) - 2*b*n + b*log(c) + a)*s
qrt(g*x + f))/g]
```

Sympy [A] time = 24.5964, size = 326, normalized size = 3.36

$$\begin{cases} -\frac{\frac{2af}{\sqrt{f+gx}}+2a\left(-\frac{f}{\sqrt{f+gx}}-\sqrt{f+gx}\right)+2bf\left(\frac{2en\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{\sqrt{\frac{e}{dg-ef}}(dg-ef)}+\frac{\log\left(c(d+ex)^n\right)}{\sqrt{f+gx}}\right)+2b\left(-\frac{2en\left(-\frac{g\sqrt{f+gx}}{e}-\frac{g\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{e\sqrt{\frac{e}{dg-ef}}}\right)}{g}-f\left(\frac{2en\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{e}{dg-ef}}\sqrt{f+gx}}\right)}{\sqrt{\frac{e}{dg-ef}}(dg-ef)}+\dots\right.\right.}{g} \\ \frac{ax+b\left(-en\left(-\frac{d\begin{cases}\frac{x}{d} & \text{for } e=0 \\ \frac{\log(d+ex)}{e} & \text{otherwise}\end{cases}}{e}+\frac{x}{e}\right)+x\log\left(c(d+ex)^n\right)\right)}{\sqrt{f}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(1/2),x)
```

```
[Out] Piecewise((-(2*a*f/sqrt(f + g*x) + 2*a*(-f/sqrt(f + g*x) - sqrt(f + g*x)) +
 2*b*f*(2*e*n*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(sqrt(e/(d*g - e*
f))*(d*g - e*f)) + log(c*(d + e*x)**n)/sqrt(f + g*x)) + 2*b*(-2*e*n*(-g*sqr
t(f + g*x)/e - g*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(e*sqrt(e/(d*g
 - e*f))))/g - f*(2*e*n*atan(1/(sqrt(e/(d*g - e*f))*sqrt(f + g*x)))/(sqrt(e
/(d*g - e*f))*(d*g - e*f)) + log(c*(d - e*f/g + e*(f + g*x)/g)**n)/sqrt(f +
```

```
g*x)) - sqrt(f + g*x)*log(c*(d - e*f/g + e*(f + g*x)/g)**n)))/g, Ne(g, 0))
, ((a*x + b*(-e*n*(-d*Piecewise((x/d, Eq(e, 0)), (log(d + e*x)/e, True))/e
+ x/e) + x*log(c*(d + e*x)**n)))/sqrt(f), True))
```

Giac [A] time = 1.26109, size = 149, normalized size = 1.54

$$\frac{2\left(\left(2\left(\frac{(dg-fe)\arctan\left(\frac{\sqrt{gx+f}e}{\sqrt{dge-fe^2}}\right)e^{(-1)}}{\sqrt{dge-fe^2}}-\sqrt{gx+f}e^{(-1)}\right)e+\sqrt{gx+f}\log\left(xe+d\right)\right)bn+\sqrt{gx+f}b\log\left(c\right)+\sqrt{gx+f}a\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] 2*((2*((d*g - f*e)*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e^(-1)/sqrt(
d*g*e - f*e^2) - sqrt(g*x + f)*e^(-1))*e + sqrt(g*x + f)*log(x*e + d))*b*n
+ sqrt(g*x + f)*b*log(c) + sqrt(g*x + f)*a)/g
```

3.141 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=81

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}-\frac{4b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}$$

```
[Out] (-4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(g*Sqrt[e
*f - d*g]) - (2*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[f + g*x])
```

Rubi [A] time = 0.0532964, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2395, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\sqrt{f+gx}}-\frac{4b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(3/2),x]
```

```
[Out] (-4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(g*Sqrt[e
*f - d*g]) - (2*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[f + g*x])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{3/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))}{g\sqrt{f+gx}} + \frac{(2ben)\int \frac{1}{(d+ex)\sqrt{f+gx}}\,dx}{g}$$
$$= -\frac{2(a+b\log(c(d+ex)^n))}{g\sqrt{f+gx}} + \frac{(4ben)\,\mathrm{Subst}\left(\int \frac{1}{d-\frac{ef}{g}+\frac{ex^2}{g}}\,dx, x, \sqrt{f+gx}\right)}{g^2}$$
$$= -\frac{4b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{g\sqrt{ef-dg}} - \frac{2(a+b\log(c(d+ex)^n))}{g\sqrt{f+gx}}$$

Mathematica [A] time = 0.163587, size = 80, normalized size = 0.99

$$\frac{2\left(-\frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx}} - \frac{2b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{ef-dg}}\right)}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(3/2),x]
```

```
[Out] (2*((-2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/Sqrt[
e*f - d*g] - (a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x]))/g
```

Maple [F] time = 0.926, size = 0, normalized size = 0.

$$\int (a+b\ln(c(ex+d)^n))(gx+f)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.89046, size = 512, normalized size = 6.32

$$\left[\frac{2\left(\left(bgnx+bfn\right)\sqrt{\frac{e}{ef-dg}}\log\left(\frac{egx+2\,ef-dg-2\left(ef-dg\right)\sqrt{gx+f}\sqrt{\frac{e}{ef-dg}}}{ex+d}\right)-\left(bn\log\left(ex+d\right)+b\log\left(c\right)+a\right)\sqrt{gx+f}\right)}{g^2x+fg},-\frac{2\left(2\left(bgnx\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] [2*((b*g*n*x + b*f*n)*sqrt(e/(e*f - d*g))*log((e*g*x + 2*e*f - d*g - 2*(e*f
 - d*g)*sqrt(g*x + f)*sqrt(e/(e*f - d*g)))/(e*x + d)) - (b*n*log(e*x + d) +
 b*log(c) + a)*sqrt(g*x + f))/(g^2*x + f*g), -2*(2*(b*g*n*x + b*f*n)*sqrt(-
e/(e*f - d*g))*arctan(-(e*f - d*g)*sqrt(g*x + f)*sqrt(-e/(e*f - d*g))/(e*g*
x + e*f)) + (b*n*log(e*x + d) + b*log(c) + a)*sqrt(g*x + f))/(g^2*x + f*g)]
```

Sympy [A] time = 16.9244, size = 85, normalized size = 1.05

$$\frac{-\frac{2a}{\sqrt{f+gx}}+2b\left(\frac{2n\operatorname{atan}\left(\frac{\sqrt{f+gx}}{\sqrt{\frac{g\left(d-\frac{ef}{g}\right)}{e}}}\right)}{\sqrt{\frac{g\left(d-\frac{ef}{g}\right)}{e}}}-\frac{\log\left(c\left(d-\frac{ef}{g}+\frac{e\left(f+gx\right)}{g}\right)^{n}\right)}{\sqrt{f+gx}}\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(3/2),x)
```

```
[Out] (-2*a/sqrt(f + g*x) + 2*b*(2*n*atan(sqrt(f + g*x)/sqrt(g*(d - e*f/g)/e))/sq
rt(g*(d - e*f/g)/e) - log(c*(d - e*f/g + e*(f + g*x)/g)**n)/sqrt(f + g*x)))
/g
```

Giac [A] time = 1.31877, size = 124, normalized size = 1.53

$$\frac{4\,bn\arctan\left(\frac{\sqrt{gx+f}e}{\sqrt{dge-fe^2}}\right)e}{\sqrt{dge-fe^2}g}-\frac{2\left(bn\log\left(dg+\left(gx+f\right)e-fe\right)-bn\log\left(g\right)+b\log\left(c\right)+a\right)}{\sqrt{gx+f}g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] 4*b*n*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e/(sqrt(d*g*e - f*e^2)*g)
 - 2*(b*n*log(d*g + (g*x + f)*e - f*e) - b*n*log(g) + b*log(c) + a)/(sqrt(g
*x + f)*g)
```

3.142 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=114

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(f+gx)^{3/2}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{4ben}{3g\sqrt{f+gx}(ef-dg)}$$

```
[Out] (4*b*e*n)/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*(e*f - d*g)^(3/2)) - (2*(a + b*Log[c
*(d + e*x)^n]))/(3*g*(f + g*x)^(3/2))
```

Rubi [A] time = 0.0815045, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 51, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{3g(f+gx)^{3/2}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}+\frac{4ben}{3g\sqrt{f+gx}(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(5/2),x]
```

```
[Out] (4*b*e*n)/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*(e*f - d*g)^(3/2)) - (2*(a + b*Log[c
*(d + e*x)^n]))/(3*g*(f + g*x)^(3/2))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{5/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}+\frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{3/2}}\,dx}{3g}$$

$$=\frac{4ben}{3g(ef-dg)\sqrt{f+gx}}-\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}+\frac{(2be^2n)\int \frac{1}{(d+ex)\sqrt{f+gx}}\,dx}{3g(ef-dg)}$$

$$=\frac{4ben}{3g(ef-dg)\sqrt{f+gx}}-\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}+\frac{(4be^2n)\,\mathrm{Subst}\left(\int \frac{1}{d-\frac{ef}{g}+\frac{ex^2}{g}}\,dx,x,\sqrt{f}\right.}{3g^2(ef-dg)}$$

$$=\frac{4ben}{3g(ef-dg)\sqrt{f+gx}}-\frac{4be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}}-\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}$$

Mathematica [C] time = 0.0363205, size = 85, normalized size = 0.75

$$-\frac{2(a+b\log(c(d+ex)^n))}{3g(f+gx)^{3/2}}-\frac{4ben\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{e(f+gx)}{ef-dg}\right)}{3g\sqrt{f+gx}(dg-ef)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(5/2),x]
```

```
[Out] (-4*b*e*n*Hypergeometric2F1[-1/2, 1, 1/2, (e*(f + g*x))/(e*f - d*g)])/(3*g*
(-(e*f) + d*g)*Sqrt[f + g*x]) - (2*(a + b*Log[c*(d + e*x)^n]))/(3*g*(f + g*
x)^(3/2))
```

Maple [F] time = 0.916, size = 0, normalized size = 0.

$$\int (a+b\ln(c(ex+d)^n))(gx+f)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="maxima")
```

[Out] Exception raised: ValueError

Fricas [B] time = 1.99567, size = 929, normalized size = 8.15

$$\left[-\frac{2\left(\left(beg^2nx^2+2\,befgnx+bef^2n\right)\sqrt{\frac{e}{ef-dg}}\log\left(\frac{egx+2\,ef-dg+2\,(ef-dg)\sqrt{gx+f}\sqrt{\frac{e}{ef-dg}}}{ex+d}\right)-\left(2\,begnx+2\,befn-aef+adg-\left(bef\right.\right.\right.}{3\left(ef^3g-df^2g^2+\left(efg^3-dg^4\right)x^2+2\left(ef^2g^2-dfg^3\right)x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*((b*e*g^2*n*x^2 + 2*b*e*f*g*n*x + b*e*f^2*n)*sqrt(e/(e*f - d*g))*log(
(e*g*x + 2*e*f - d*g + 2*(e*f - d*g)*sqrt(g*x + f)*sqrt(e/(e*f - d*g)))/(e*
x + d)) - (2*b*e*g*n*x + 2*b*e*f*n - a*e*f + a*d*g - (b*e*f - b*d*g)*n*log(
e*x + d) - (b*e*f - b*d*g)*log(c))*sqrt(g*x + f))/(e*f^3*g - d*f^2*g^2 + (e
*f*g^3 - d*g^4)*x^2 + 2*(e*f^2*g^2 - d*f*g^3)*x), -2/3*(2*(b*e*g^2*n*x^2 +
2*b*e*f*g*n*x + b*e*f^2*n)*sqrt(-e/(e*f - d*g))*arctan(-(e*f - d*g)*sqrt(g*
x + f)*sqrt(-e/(e*f - d*g))/(e*g*x + e*f)) - (2*b*e*g*n*x + 2*b*e*f*n - a*e
*f + a*d*g - (b*e*f - b*d*g)*n*log(e*x + d) - (b*e*f - b*d*g)*log(c))*sqrt(
g*x + f))/(e*f^3*g - d*f^2*g^2 + (e*f*g^3 - d*g^4)*x^2 + 2*(e*f^2*g^2 - d*f
*g^3)*x)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(5/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 1.27552, size = 258, normalized size = 2.26

$$-\frac{4\,bgn\arctan\left(\frac{\sqrt{gx+f}e}{\sqrt{dge-fe^2}}\right)e^2}{3\left(dg^3-fg^2e\right)\sqrt{dge-fe^2}}-\frac{2\left(bdgn\log\left(dg+\left(gx+f\right)e-fe\right)-bfne\log\left(dg+\left(gx+f\right)e-fe\right)-bdgn\log\left(g\right)+bfne\right.}{3\left(\left(gx+f\right)^{\frac{3}{2}}dg^2-\left(gx+f\right)^{\frac{3}{2}}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] -4/3*b*g*n*arctan(sqrt(g*x + f)*e/sqrt(d*g*e - f*e^2))*e^2/((d*g^3 - f*g^2*
e)*sqrt(d*g*e - f*e^2)) - 2/3*(b*d*g*n*log(d*g + (g*x + f)*e - f*e) - b*f*n
*e*log(d*g + (g*x + f)*e - f*e) - b*d*g*n*log(g) + b*f*n*e*log(g) + 2*(g*x
+ f)*b*n*e + b*d*g*log(c) - b*f*e*log(c) + a*d*g - a*f*e)/((g*x + f)^(3/2)*
d*g^2 - (g*x + f)^(3/2)*f*g*e)
```

3.143 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{7/2}}\,dx$

Optimal. Leaf size=145

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(f+gx)^{5/2}}+\frac{4be^2n}{5g\sqrt{f+gx}(ef-dg)^2}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}+\frac{4ben}{15g(f+gx)^{3/2}(ef-dg)}$$

```
[Out] (4*b*e*n)/(15*g*(e*f - d*g)*(f + g*x)^(3/2)) + (4*b*e^2*n)/(5*g*(e*f - d*g)
^2*Sqrt[f + g*x]) - (4*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
 - d*g]])/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(5*g*(f
+ g*x)^(5/2))
```

Rubi [A] time = 0.110727, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 51, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{5g(f+gx)^{5/2}}+\frac{4be^2n}{5g\sqrt{f+gx}(ef-dg)^2}-\frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}}+\frac{4ben}{15g(f+gx)^{3/2}(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(7/2),x]
```

```
[Out] (4*b*e*n)/(15*g*(e*f - d*g)*(f + g*x)^(3/2)) + (4*b*e^2*n)/(5*g*(e*f - d*g)
^2*Sqrt[f + g*x]) - (4*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
 - d*g]])/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(5*g*(f
+ g*x)^(5/2))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{7/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))}{5g(f+gx)^{5/2}} + \frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{5/2}}\,dx}{5g}$$

$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} - \frac{2(a+b\log(c(d+ex)^n))}{5g(f+gx)^{5/2}} + \frac{(2be^2n)\int \frac{1}{(d+ex)(f+gx)^{3/2}}\,dx}{5g(ef-dg)}$$

$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} + \frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}} - \frac{2(a+b\log(c(d+ex)^n))}{5g(f+gx)^{5/2}} + \frac{(2be^3n)\int \frac{}{(}}{5g(ef}$$

$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} + \frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}} - \frac{2(a+b\log(c(d+ex)^n))}{5g(f+gx)^{5/2}} + \frac{(4be^3n)\,\mathrm{Su}}{}$$

$$= \frac{4ben}{15g(ef-dg)(f+gx)^{3/2}} + \frac{4be^2n}{5g(ef-dg)^2\sqrt{f+gx}} - \frac{4be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{5g(ef-dg)^{5/2}} - \frac{2(a+b\,\mathrm{lo}}{5g(f}$$

Mathematica [C] time = 0.0460885, size = 78, normalized size = 0.54

$$\frac{2\left(\frac{2ben(f+gx)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{e(f+gx)}{ef-dg}\right)}{ef-dg} - 3(a+b\log(c(d+ex)^n))\right)}{15g(f+gx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(7/2),x]
```

```
[Out] (2*((2*b*e*n*(f + g*x)*Hypergeometric2F1[-3/2, 1, -1/2, (e*(f + g*x))/(e*f
- d*g)])/(e*f - d*g) - 3*(a + b*Log[c*(d + e*x)^n])))/(15*g*(f + g*x)^(5/2)
)
```

Maple [F] time = 0.921, size = 0, normalized size = 0.

$$\int (a+b\ln(c(ex+d)^n))(gx+f)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(7/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.10924, size = 1678, normalized size = 11.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="fricas")
```

```
[Out] [2/15*(3*(b*e^2*g^3*n*x^3 + 3*b*e^2*f*g^2*n*x^2 + 3*b*e^2*f^2*g*n*x + b*e^2
*f^3*n)*sqrt(e/(e*f - d*g))*log((e*g*x + 2*e*f - d*g - 2*(e*f - d*g)*sqrt(g
*x + f)*sqrt(e/(e*f - d*g)))/(e*x + d)) + (6*b*e^2*g^2*n*x^2 - 3*a*e^2*f^2
+ 6*a*d*e*f*g - 3*a*d^2*g^2 + 2*(7*b*e^2*f*g - b*d*e*g^2)*n*x - 3*(b*e^2*f^
2 - 2*b*d*e*f*g + b*d^2*g^2)*n*log(e*x + d) + 2*(4*b*e^2*f^2 - b*d*e*f*g)*n
 - 3*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*log(c))*sqrt(g*x + f))/(e^2*f^5*
g - 2*d*e*f^4*g^2 + d^2*f^3*g^3 + (e^2*f^2*g^4 - 2*d*e*f*g^5 + d^2*g^6)*x^3
 + 3*(e^2*f^3*g^3 - 2*d*e*f^2*g^4 + d^2*f*g^5)*x^2 + 3*(e^2*f^4*g^2 - 2*d*e
*f^3*g^3 + d^2*f^2*g^4)*x), -2/15*(6*(b*e^2*g^3*n*x^3 + 3*b*e^2*f*g^2*n*x^2
 + 3*b*e^2*f^2*g*n*x + b*e^2*f^3*n)*sqrt(-e/(e*f - d*g))*arctan(-(e*f - d*g
)*sqrt(g*x + f)*sqrt(-e/(e*f - d*g))/(e*g*x + e*f)) - (6*b*e^2*g^2*n*x^2 -
3*a*e^2*f^2 + 6*a*d*e*f*g - 3*a*d^2*g^2 + 2*(7*b*e^2*f*g - b*d*e*g^2)*n*x -
 3*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*n*log(e*x + d) + 2*(4*b*e^2*f^2 -
b*d*e*f*g)*n - 3*(b*e^2*f^2 - 2*b*d*e*f*g + b*d^2*g^2)*log(c))*sqrt(g*x + f
))/(e^2*f^5*g - 2*d*e*f^4*g^2 + d^2*f^3*g^3 + (e^2*f^2*g^4 - 2*d*e*f*g^5 +
d^2*g^6)*x^3 + 3*(e^2*f^3*g^3 - 2*d*e*f^2*g^4 + d^2*f*g^5)*x^2 + 3*(e^2*f^4
*g^2 - 2*d*e*f^3*g^3 + d^2*f^2*g^4)*x)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(gx+f)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f)^(7/2), x)
```

3.144 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{9/2}}\,dx$

Optimal. Leaf size=176

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}}+\frac{4be^3n}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{4be^2n}{21g(f+gx)^{3/2}(ef-dg)^2}-\frac{4be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{7g(ef-dg)^{7/2}}+\frac{4}{35g(f+g}$$

```
[Out] (4*b*e*n)/(35*g*(e*f - d*g)*(f + g*x)^(5/2)) + (4*b*e^2*n)/(21*g*(e*f - d*g
)^2*(f + g*x)^(3/2)) + (4*b*e^3*n)/(7*g*(e*f - d*g)^3*Sqrt[f + g*x]) - (4*b
*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(7*g*(e*f - d*
g)^(7/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(7*g*(f + g*x)^(7/2))
```

Rubi [A] time = 0.144247, antiderivative size = 176, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2395, 51, 63, 208}

$$-\frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g(f+gx)^{7/2}}+\frac{4be^3n}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{4be^2n}{21g(f+gx)^{3/2}(ef-dg)^2}-\frac{4be^{7/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{7g(ef-dg)^{7/2}}+\frac{4}{35g(f+g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(9/2),x]
```

```
[Out] (4*b*e*n)/(35*g*(e*f - d*g)*(f + g*x)^(5/2)) + (4*b*e^2*n)/(21*g*(e*f - d*g
)^2*(f + g*x)^(3/2)) + (4*b*e^3*n)/(7*g*(e*f - d*g)^3*Sqrt[f + g*x]) - (4*b
*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(7*g*(e*f - d*
g)^(7/2)) - (2*(a + b*Log[c*(d + e*x)^n]))/(7*g*(f + g*x)^(7/2))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^{9/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))}{7g(f+gx)^{7/2}}+\frac{(2ben)\int \frac{1}{(d+ex)(f+gx)^{7/2}}\,dx}{7g}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}-\frac{2(a+b\log(c(d+ex)^n))}{7g(f+gx)^{7/2}}+\frac{\left(2be^2n\right)\int \frac{1}{(d+ex)(f+gx)^{5/2}}\,dx}{7g(ef-dg)}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}-\frac{2(a+b\log(c(d+ex)^n))}{7g(f+gx)^{7/2}}+\frac{(2be}{}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}}-\frac{2(a+b}{7g}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}}-\frac{2(a+b}{7g}$$

$$= \frac{4ben}{35g(ef-dg)(f+gx)^{5/2}}+\frac{4be^2n}{21g(ef-dg)^2(f+gx)^{3/2}}+\frac{4be^3n}{7g(ef-dg)^3\sqrt{f+gx}}-\frac{4be^{7/2}n}{7g}$$

Mathematica [C] time = 0.049949, size = 78, normalized size = 0.44

$$\frac{2\left(\frac{2ben(f+gx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{e(f+gx)}{ef-dg}\right)}{ef-dg}-5(a+b\log(c(d+ex)^n))\right)}{35g(f+gx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^(9/2),x]
```

```
[Out] (2*((2*b*e*n*(f + g*x)*Hypergeometric2F1[-5/2, 1, -3/2, (e*(f + g*x))/(e*f
- d*g)])/(e*f - d*g) - 5*(a + b*Log[c*(d + e*x)^n])))/(35*g*(f + g*x)^(7/2)
)
```

Maple [F] time = 0.9, size = 0, normalized size = 0.

$$\int (a+b\ln(c(ex+d)^n))\left(gx+f\right)^{-\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^(9/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.43938, size = 2611, normalized size = 14.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="fricas")
```

```
[Out] [-2/105*(15*(b*e^3*g^4*n*x^4 + 4*b*e^3*f*g^3*n*x^3 + 6*b*e^3*f^2*g^2*n*x^2
+ 4*b*e^3*f^3*g*n*x + b*e^3*f^4*n)*sqrt(e/(e*f - d*g))*log((e*g*x + 2*e*f -
 d*g + 2*(e*f - d*g)*sqrt(g*x + f)*sqrt(e/(e*f - d*g)))/(e*x + d)) - (30*b*
e^3*g^3*n*x^3 - 15*a*e^3*f^3 + 45*a*d*e^2*f^2*g - 45*a*d^2*e*f*g^2 + 15*a*d
^3*g^3 + 10*(10*b*e^3*f*g^2 - b*d*e^2*g^3)*n*x^2 + 2*(58*b*e^3*f^2*g - 16*b
*d*e^2*f*g^2 + 3*b*d^2*e*g^3)*n*x - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d
^2*e*f*g^2 - b*d^3*g^3)*n*log(e*x + d) + 2*(23*b*e^3*f^3 - 11*b*d*e^2*f^2*g
 + 3*b*d^2*e*f*g^2)*n - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 -
 b*d^3*g^3)*log(c))*sqrt(g*x + f))/(e^3*f^7*g - 3*d*e^2*f^6*g^2 + 3*d^2*e*f
^5*g^3 - d^3*f^4*g^4 + (e^3*f^3*g^5 - 3*d*e^2*f^2*g^6 + 3*d^2*e*f*g^7 - d^3
*g^8)*x^4 + 4*(e^3*f^4*g^4 - 3*d*e^2*f^3*g^5 + 3*d^2*e*f^2*g^6 - d^3*f*g^7)
*x^3 + 6*(e^3*f^5*g^3 - 3*d*e^2*f^4*g^4 + 3*d^2*e*f^3*g^5 - d^3*f^2*g^6)*x^
2 + 4*(e^3*f^6*g^2 - 3*d*e^2*f^5*g^3 + 3*d^2*e*f^4*g^4 - d^3*f^3*g^5)*x), -
2/105*(30*(b*e^3*g^4*n*x^4 + 4*b*e^3*f*g^3*n*x^3 + 6*b*e^3*f^2*g^2*n*x^2 +
4*b*e^3*f^3*g*n*x + b*e^3*f^4*n)*sqrt(-e/(e*f - d*g))*arctan(-(e*f - d*g)*s
qrt(g*x + f)*sqrt(-e/(e*f - d*g))/(e*g*x + e*f)) - (30*b*e^3*g^3*n*x^3 - 15
*a*e^3*f^3 + 45*a*d*e^2*f^2*g - 45*a*d^2*e*f*g^2 + 15*a*d^3*g^3 + 10*(10*b*
e^3*f*g^2 - b*d*e^2*g^3)*n*x^2 + 2*(58*b*e^3*f^2*g - 16*b*d*e^2*f*g^2 + 3*b
*d^2*e*g^3)*n*x - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3
*g^3)*n*log(e*x + d) + 2*(23*b*e^3*f^3 - 11*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2
)*n - 15*(b*e^3*f^3 - 3*b*d*e^2*f^2*g + 3*b*d^2*e*f*g^2 - b*d^3*g^3)*log(c)
)*sqrt(g*x + f))/(e^3*f^7*g - 3*d*e^2*f^6*g^2 + 3*d^2*e*f^5*g^3 - d^3*f^4*g
^4 + (e^3*f^3*g^5 - 3*d*e^2*f^2*g^6 + 3*d^2*e*f*g^7 - d^3*g^8)*x^4 + 4*(e^3
*f^4*g^4 - 3*d*e^2*f^3*g^5 + 3*d^2*e*f^2*g^6 - d^3*f*g^7)*x^3 + 6*(e^3*f^5*
g^3 - 3*d*e^2*f^4*g^4 + 3*d^2*e*f^3*g^5 - d^3*f^2*g^6)*x^2 + 4*(e^3*f^6*g^2
 - 3*d*e^2*f^5*g^3 + 3*d^2*e*f^4*g^4 - d^3*f^3*g^5)*x)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f)^(9/2), x)
```

3.145 $\int (f+gx)^{3/2} (a+b\log(c(d+ex)^n))^2\, dx$

Optimal. Leaf size=590

$$\frac{8b^2n^2(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5e^{5/2}g}-\frac{8bn\sqrt{f+gx}(ef-dg)^2(a+b\log(c(d+ex)^n))}{5e^2g}+\frac{8bn(ef-dg)^{5/2}\tanh^{-1}(}{}$$

```
[Out] (368*b^2*(e*f - d*g)^2*n^2*Sqrt[f + g*x])/(75*e^2*g) + (128*b^2*(e*f - d*g)
*n^2*(f + g*x)^(3/2))/(225*e*g) + (16*b^2*n^2*(f + g*x)^(5/2))/(125*g) - (3
68*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(75*e^(5/2)*g) - (8*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]]^2)/(5*e^(5/2)*g) - (8*b*(e*f - d*g)^2*n*Sqrt[f + g*
x]*(a + b*Log[c*(d + e*x)^n]))/(5*e^2*g) - (8*b*(e*f - d*g)*n*(f + g*x)^(3/
2)*(a + b*Log[c*(d + e*x)^n]))/(15*e*g) - (8*b*n*(f + g*x)^(5/2)*(a + b*Log
[c*(d + e*x)^n]))/(25*g) + (8*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])^2)/(5*g) + (16*b^2*(e*f - d*g)^(5/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^(5/2)*g) + (8*b^2*(e*f - d*g)^(5/2)
*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^
(5/2)*g)
```

Rubi [A] time = 2.16859, antiderivative size = 590, normalized size of antiderivative = 1., number of steps used = 28, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$\frac{8b^2n^2(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5e^{5/2}g}-\frac{8bn\sqrt{f+gx}(ef-dg)^2(a+b\log(c(d+ex)^n))}{5e^2g}+\frac{8bn(ef-dg)^{5/2}\tanh^{-1}(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2,x]
```



```
[Out] (368*b^2*(e*f - d*g)^2*n^2*Sqrt[f + g*x])/(75*e^2*g) + (128*b^2*(e*f - d*g)
*n^2*(f + g*x)^(3/2))/(225*e*g) + (16*b^2*n^2*(f + g*x)^(5/2))/(125*g) - (3
68*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(75*e^(5/2)*g) - (8*b^2*(e*f - d*g)^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]]^2)/(5*e^(5/2)*g) - (8*b*(e*f - d*g)^2*n*Sqrt[f + g*
x]*(a + b*Log[c*(d + e*x)^n]))/(5*e^2*g) - (8*b*(e*f - d*g)*n*(f + g*x)^(3/
2)*(a + b*Log[c*(d + e*x)^n]))/(15*e*g) - (8*b*n*(f + g*x)^(5/2)*(a + b*Log
[c*(d + e*x)^n]))/(25*g) + (8*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*e^(5/2)*g) + (2*(f
 + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])^2)/(5*g) + (16*b^2*(e*f - d*g)^(5/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^(5/2)*g) + (8*b^2*(e*f - d*g)^(5/2)
*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*e^
(5/2)*g)
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
```

```
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int (f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx=\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g}-\frac{(4ben)\int\frac{(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx}{5g}$$

$$=\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g}-\frac{(4bn)\operatorname{Subst}\left(\int\frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}(a+b\log(}{x}\right.}{5g}$$

$$=\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{5g}-\frac{(4bn)\operatorname{Subst}\left(\int\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}(a\right.}{5e}$$

$$=-\frac{8bn(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{25g}+\frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex\right.\right.}{5g}$$

$$=\frac{16b^2n^2(f+gx)^{5/2}}{125g}-\frac{8b(ef-dg)n(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{15eg}-8b$$

$$=\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+gx)^{5/2}}{125g}-\frac{8b(ef-dg)^2n\sqrt{f+g}}{5}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

$$=\frac{368b^2(ef-dg)^2n^2\sqrt{f+gx}}{75e^2g}+\frac{128b^2(ef-dg)n^2(f+gx)^{3/2}}{225eg}+\frac{16b^2n^2(f+}{125g}$$

Mathematica [A] time = 1.85039, size = 854, normalized size = 1.45

$$\frac{2\left((f+gx)^{5/2}(a+b\log(c(d+ex)^n))^2-\frac{bn\left(450(a+b\log(c(d+ex)^n))\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)(ef-dg)^{5/2}-450(a+b\log(c(d+ex)^n))\log\left(\sqrt{ef-dg}+\sqrt{e}\sqrt{\right.\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])^2 - (b*n*(900*a*Sqrt[e]*(e*f
 - d*g)^2*Sqrt[f + g*x] - 1800*b*(e*f - d*g)^2*n*(Sqrt[e]*Sqrt[f + g*x] - S
qrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) - 200*b*(e
*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^
(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) - 24*b*n*(3*e^(5/2)
*(f + g*x)^(5/2) + 5*(e*f - d*g)*(Sqrt[e]*Sqrt[f + g*x]*(4*e*f - 3*d*g + e*
g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
)) + 900*b*Sqrt[e]*(e*f - d*g)^2*Sqrt[f + g*x]*Log[c*(d + e*x)^n] + 300*e^(
3/2)*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]) + 180*e^(5/2)*(
f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]) + 450*(e*f - d*g)^(5/2)*(a + b*Lo
g[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 450*(e*f -
 d*g)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f
 + g*x]] - 225*b*(e*f - d*g)^(5/2)*n*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f
+ g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f +
 g*x])/(2*Sqrt[e*f - d*g])]) + 225*b*(e*f - d*g)^(5/2)*n*(Log[Sqrt[e*f - d*
g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] +
 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (
1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(225*e^(5/2))))/(5*g)
```

Maple [F] time = 1.01, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{\frac{3}{2}} \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^2gx + b^2f\right)\sqrt{gx+f}\log\left((ex+d)^nc\right)^2 + 2\left(abgx + abf\right)\sqrt{gx+f}\log\left((ex+d)^nc\right) + \left(a^2gx + a^2f\right)\sqrt{gx+f}, x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*g*x + b^2*f)*sqrt(g*x + f)*log((e*x + d)^n*c)^2 + 2*(a*b*g*x
+ a*b*f)*sqrt(g*x + f)*log((e*x + d)^n*c) + (a^2*g*x + a^2*f)*sqrt(g*x + f)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (gx+f)^{\frac{3}{2}}\left(b\log\left((ex+d)^nc\right) + a\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a)^2, x)
```

3.146 $\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2\,dx$

Optimal. Leaf size=510

$$\frac{8b^2n^2(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3e^{3/2}g}+\frac{8bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3e^{3/2}g}-\frac{8bn(f+gx)^{3}}{}$$

```
[Out] (64*b^2*(e*f - d*g)*n^2*Sqrt[f + g*x])/(9*e*g) + (16*b^2*n^2*(f + g*x)^(3/2
))/(27*g) - (64*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/S
qrt[e*f - d*g]])/(9*e^(3/2)*g) - (8*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt
[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(3*e^(3/2)*g) - (8*b*(e*f - d*g)*n*S
qrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e*g) - (8*b*n*(f + g*x)^(3/2)*(
a + b*Log[c*(d + e*x)^n]))/(9*g) + (8*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*e^(3/2)*g)
 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) + (16*b^2*(e*f -
d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 -
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*e^(3/2)*g) + (8*b^2*(e*f - d*
g)^(3/2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(3*e^(3/2)*g)
```

Rubi [A] time = 1.50058, antiderivative size = 510, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$\frac{8b^2n^2(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3e^{3/2}g}+\frac{8bn(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3e^{3/2}g}-\frac{8bn(f+gx)^{3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2,x]
```



```
[Out] (64*b^2*(e*f - d*g)*n^2*Sqrt[f + g*x])/(9*e*g) + (16*b^2*n^2*(f + g*x)^(3/2
))/(27*g) - (64*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/S
qrt[e*f - d*g]])/(9*e^(3/2)*g) - (8*b^2*(e*f - d*g)^(3/2)*n^2*ArcTanh[(Sqrt
[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(3*e^(3/2)*g) - (8*b*(e*f - d*g)*n*S
qrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(3*e*g) - (8*b*n*(f + g*x)^(3/2)*(
a + b*Log[c*(d + e*x)^n]))/(9*g) + (8*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*e^(3/2)*g)
 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) + (16*b^2*(e*f -
d*g)^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 -
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*e^(3/2)*g) + (8*b^2*(e*f - d*
g)^(3/2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(3*e^(3/2)*g)
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
```

```
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
```

```
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2\,dx = \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g} - \frac{(4ben)\int \frac{(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx}{3g}$$

$$= \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}(a+b\log(cx}{x}\right.}{3g}$$

$$= \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n))^2}{3g} - \frac{(4bn)\,\mathrm{Subst}\left(\int \sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\,(a+b\,l\right.}{3e}$$

$$= -\frac{8bn(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{9g} + \frac{2(f+gx)^{3/2}(a+b\log(c(d+ex)^n}{3g}$$

$$= \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{3eg} - \frac{8bn(f}{}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f+gx}\,(a+}{3eg}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{8b(ef-dg)n\sqrt{f+gx}\,(a+}{3eg}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n^2\tanh^{-1}}{9e^{3/2}g}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n^2\tanh^{-1}}{9e^{3/2}g}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n^2\tanh^{-1}}{9e^{3/2}g}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n^2\tanh^{-1}}{9e^{3/2}g}$$

$$= \frac{64b^2(ef-dg)n^2\sqrt{f+gx}}{9eg} + \frac{16b^2n^2(f+gx)^{3/2}}{27g} - \frac{64b^2(ef-dg)^{3/2}n^2\tanh^{-1}}{9e^{3/2}g}$$

Mathematica [A] time = 1.09339, size = 643, normalized size = 1.26

$$2\left((f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)^2-\frac{bn\left(-9bn(ef-dg)^{3/2}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\right.\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2 - (b*n*(36*a*Sqrt[e]*(e*f
- d*g)*Sqrt[f + g*x] - 8*b*e^(3/2)*n*(f + g*x)^(3/2) - 96*b*(e*f - d*g)*n*(
Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqr
t[e*f - d*g]]) + 36*b*Sqrt[e]*(e*f - d*g)*Sqrt[f + g*x]*Log[c*(d + e*x)^n]
+ 12*e^(3/2)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]) + 18*(e*f - d*g)^(3
/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]
 - 18*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sq
rt[e]*Sqrt[f + g*x]] - 9*b*(e*f - d*g)^(3/2)*n*(Log[Sqrt[e*f - d*g] - Sqrt[
e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1
+ (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e
]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 9*b*(e*f - d*g)^(3/2)*n*(Log[Sqrt[
e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f +
 g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*Poly
Log[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(9*e^(3/2))))/(3
*g)
```

Maple [F] time = 1.007, size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{gx+f}b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\sqrt{gx+f}ab\log\left(\left(ex+d\right)^{n}c\right)+\sqrt{gx+f}a^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log((
e*x + d)^n*c) + sqrt(g*x + f)*a^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\left(b\log\left((ex+d)^n c\right)+a\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a)^2, x)
```

3.147 $\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=418

$$\frac{8b^2n^2\sqrt{ef-dg}\,\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}g}-\frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}+\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g}+$$

```
[Out] (16*b^2*n^2*Sqrt[f + g*x])/g - (16*b^2*Sqrt[e*f - d*g]*n^2*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) - (8*b^2*Sqrt[e*f - d*g]*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*g) - (8*b*n*Sq
rt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/g + (8*b*Sqrt[e*f - d*g]*n*ArcTanh[
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[
e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2)/g + (16*b^2*Sqrt[e*f
 - d*g]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sq
rt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*g) + (8*b^2*Sqrt[e*f - d*g
]*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqr
t[e]*g)
```

Rubi [A] time = 1.06726, antiderivative size = 418, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$\frac{8b^2n^2\sqrt{ef-dg}\,\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}g}-\frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g}+\frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x],x]
```


```
[Out] (16*b^2*n^2*Sqrt[f + g*x])/g - (16*b^2*Sqrt[e*f - d*g]*n^2*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(Sqrt[e]*g) - (8*b^2*Sqrt[e*f - d*g]*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*g) - (8*b*n*Sq
rt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/g + (8*b*Sqrt[e*f - d*g]*n*ArcTanh[
(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[
e]*g) + (2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2)/g + (16*b^2*Sqrt[e*f
 - d*g]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sq
rt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*g) + (8*b^2*Sqrt[e*f - d*g
]*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(Sqr
t[e]*g)
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{f+gx}}\,dx = \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g} - \frac{(4ben)\int \frac{\sqrt{f+gx}(a+b\log(c(d+ex)^n))}{d+ex}\,dx}{g}$$

$$= \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}(a+b\log(cx^n))}{x}\,dx, x, d+e \ldots\right.}{g}$$

$$= \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2}{g} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e} - \frac{(4b(\ldots}{\ldots}$$

$$= -\frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} + \frac{8b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c\ldots}{\sqrt{e}g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} + \frac{8b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f\ldots}}{\sqrt{ef\ldots}}\right.}{\sqrt{\ldots}}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{8bn\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{g} + \frac{8b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f\ldots}}{\sqrt{ef\ldots}}\right.}{\sqrt{\ldots}}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g} - \frac{8bn\sqrt{f+gx}\,(a+b\log(c(d\ldots}{g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g} - \frac{8b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\ldots}{\sqrt{e}\ldots}\right.}{\sqrt{e}g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g} - \frac{8b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\ldots}{\sqrt{e}\ldots}\right.}{\sqrt{e}g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g} - \frac{8b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\ldots}{\sqrt{e}\ldots}\right.}{\sqrt{e}g}$$

$$= \frac{16b^2n^2\sqrt{f+gx}}{g} - \frac{16b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{\sqrt{e}g} - \frac{8b^2\sqrt{ef-dg}\,n^2\tanh^{-1}\left(\frac{\sqrt{e}\ldots}{\sqrt{e}\ldots}\right.}{\sqrt{e}g}$$

Mathematica [A] time = 1.09204, size = 566, normalized size = 1.35

$$2\left(\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))^2-\frac{bn\left(-bn\sqrt{ef-dg}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\left(\frac{\sqrt{e}\cdots}{\sqrt{e}\cdots}\right.\right.\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x],x]
```

```
[Out] (2*(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])^2 - (b*n*(4*a*Sqrt[e]*Sqrt[f +
 g*x] - 8*b*n*(Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqr
t[f + g*x])/Sqrt[e*f - d*g]]) + 4*b*Sqrt[e]*Sqrt[f + g*x]*Log[c*(d + e*x)^n
] + 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt
[e]*Sqrt[f + g*x]] - 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[
e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - b*Sqrt[e*f - d*g]*n*(Log[Sqrt[e*f - d
*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]
+ 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/
2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*Sqrt[e*f - d*g]*n*(Lo
g[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*S
qrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) +
 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/Sqrt[e]))
/g
```

Maple [F] time = 0.961, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\frac{1}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\sqrt{gx+f}ab\log\left(\left(ex+d\right)^{n}c\right)+\sqrt{gx+f}a^{2}}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/sqrt(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{2}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/sqrt(g*x + f), x)
```

3.148 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=312

$$-\frac{8b^2\sqrt{e}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{g\sqrt{ef-dg}}-\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}}-\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}}+$$

```
[Out] (8*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(g*S
qrt[e*f - d*g]) - (8*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g]]*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[e*f - d*g]) - (2*(a + b*Log[c*(d
 + e*x)^n])^2)/(g*Sqrt[f + g*x]) - (16*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqr
t[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/(g*Sqrt[e*f - d*g]) - (8*b^2*Sqrt[e]*n^2*PolyLog[2, 1 - 2/(1 - (Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(g*Sqrt[e*f - d*g])
```

Rubi [A] time = 0.765924, antiderivative size = 312, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 12, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462, Rules used = {2398, 2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315}

$$-\frac{8b^2\sqrt{e}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{g\sqrt{ef-dg}}-\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}}-\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(3/2),x]
```

```
[Out] (8*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(g*S
qrt[e*f - d*g]) - (8*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g]]*(a + b*Log[c*(d + e*x)^n]))/(g*Sqrt[e*f - d*g]) - (2*(a + b*Log[c*(d
 + e*x)^n])^2)/(g*Sqrt[f + g*x]) - (16*b^2*Sqrt[e]*n^2*ArcTanh[(Sqrt[e]*Sqr
t[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/(g*Sqrt[e*f - d*g]) - (8*b^2*Sqrt[e]*n^2*PolyLog[2, 1 - 2/(1 - (Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(g*Sqrt[e*f - d*g])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{3/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx}{g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(4bn)\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{g}$$

$$= -\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} - \frac{(4b^2n^2 \cdots}{\cdots}$$

$$= -\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(8b^2\sqrt{\cdots}}{\cdots}$$

$$= -\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(16b^2e \cdots}{\cdots}$$

$$= -\frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a+b\log(c(d+ex)^n))^2}{g\sqrt{f+gx}} + \frac{(16b^2e \cdots}{\cdots}$$

$$= \frac{8b^2\sqrt{e}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a \cdots}{\cdots}$$

$$= \frac{8b^2\sqrt{e}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a \cdots}{\cdots}$$

$$= \frac{8b^2\sqrt{e}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a \cdots}{\cdots}$$

$$= \frac{8b^2\sqrt{e}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{g\sqrt{ef-dg}} - \frac{8b\sqrt{e}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{ef-dg}} - \frac{2(a \cdots}{\cdots}$$

Mathematica [A] time = 0.624339, size = 424, normalized size = 1.36

$$2\left(\frac{b\sqrt{e}n\left(-bn\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}+1\right)\right)\right)\right)+bn\left(2\text{PolyLog}\left(2,\frac{1}{2}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}+1\right)\right)\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(3/2),x]
```

```
[Out] (2*(-((a + b*Log[c*(d + e*x)^n])^2/Sqrt[f + g*x]) + (b*Sqrt[e]*n*(2*(a + b*
Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 2*(a + b
*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - b*n*(Lo
g[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*S
qrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2
*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*n*(Log[
Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqr
t[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2
*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/Sqrt[e*f -
d*g]))/g
```

Maple [F] time = 0.905, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)^{2}\left(gx+f\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b^{2}\log\left((ex+d)^{n}c\right)^{2}+2\,\sqrt{gx+f}\,ab\log\left((ex+d)^{n}c\right)+\sqrt{gx+f}\,a^{2}}{g^{2}x^{2}+2\,fgx+f^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}}{\left(f + gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x)**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(ex + d\right)^{n}c\right) + a\right)^{2}}{\left(gx + f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(3/2), x)
```

3.149 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=423

$$-\frac{8b^2e^{3/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3g(ef-dg)^{3/2}}-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^{3/2}}+\frac{8ben(a+b\log(c(d+ex}{3g\sqrt{f+gx}(ef-dg)}$$

```
[Out] (16*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*
(e*f - d*g)^(3/2)) + (8*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqr
t[e*f - d*g]]^2)/(3*g*(e*f - d*g)^(3/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^
n]))/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (8*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*g*(e*f - d*g)^(3
/2)) - (2*(a + b*Log[c*(d + e*x)^n])^2)/(3*g*(f + g*x)^(3/2)) - (16*b^2*e^(
3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*g*(e*f - d*g)^(3/2)) - (8*b^2*e^(3/
2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*
g*(e*f - d*g)^(3/2))
```

Rubi [A] time = 1.12082, antiderivative size = 423, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319}

$$-\frac{8b^2e^{3/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{3g(ef-dg)^{3/2}}-\frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^{3/2}}+\frac{8ben(a+b\log(c(d+ex}{3g\sqrt{f+gx}(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(5/2),x]
```


```
[Out] (16*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*g*
(e*f - d*g)^(3/2)) + (8*b^2*e^(3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqr
t[e*f - d*g]]^2)/(3*g*(e*f - d*g)^(3/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^
n]))/(3*g*(e*f - d*g)*Sqrt[f + g*x]) - (8*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(3*g*(e*f - d*g)^(3
/2)) - (2*(a + b*Log[c*(d + e*x)^n])^2)/(3*g*(f + g*x)^(3/2)) - (16*b^2*e^(
3/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*g*(e*f - d*g)^(3/2)) - (8*b^2*e^(3/
2)*n^2*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(3*
g*(e*f - d*g)^(3/2))
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{5/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^{3/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx}{3g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^{3/2}} + \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{3g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{3g(f+gx)^{3/2}} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{3(ef-dg)} + \frac{(4ben)\,\mathrm{Subst}}{}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^{3/2}} - \frac{2(a}{}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{3g(ef-dg)^{3/2}} - \frac{2(a}{}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{3g(ef-dg)\sqrt{f+gx}} - \frac{8be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex}{3g(ef-dg)\sqrt{f+gx}}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex}{3g(ef-dg)\sqrt{f+gx}}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex}{3g(ef-dg)\sqrt{f+gx}}$$

$$= \frac{16b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3g(ef-dg)^{3/2}} + \frac{8b^2e^{3/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{3g(ef-dg)^{3/2}} + \frac{8ben(a+b\log(c(d+ex}{3g(ef-dg)\sqrt{f+gx}}$$

Mathematica [A] time = 1.50916, size = 557, normalized size = 1.32

$$2\left(\frac{ben(f+gx)\left(-b\sqrt{e}n\sqrt{f+gx}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}+1\right)\right)\right)\right)+b\sqrt{e}n\sqrt{f+gx}\left(2\text{Pol}\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(5/2),x]
```

```
[Out] (2*(-(a + b*Log[c*(d + e*x)^n])^2 + (b*e*n*(f + g*x)*(8*b*Sqrt[e]*n*Sqrt[f
+ g*x]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] + 4*Sqrt[e*f - d*g]
*(a + b*Log[c*(d + e*x)^n]) + 2*Sqrt[e]*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x
)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 2*Sqrt[e]*Sqrt[f + g*x
]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] -
 b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(L
og[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f +
g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*
Sqrt[e*f - d*g])]) + b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[Sqrt[e*f - d*g] + Sqrt[
e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2
 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(e*f - d*g)^(3/2)))/(3*g*(f + g*x)
^(3/2))
```

Maple [F] time = 0.925, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\left(gx+f\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\sqrt{gx+f}ab\log\left(\left(ex+d\right)^{n}c\right)+\sqrt{gx+f}a^{2}}{g^{3}x^{3}+3fg^{2}x^{2}+3f^{2}gx+f^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^
3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(5/2), x)
```

3.150 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{7/2}}\,dx$

Optimal. Leaf size=503

$$-\frac{8b^2e^{5/2}n^2\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5g(ef-dg)^{5/2}}+\frac{8be^2n\,(a+b\log\left(c(d+ex)^n\right))}{5g\sqrt{f+gx}(ef-dg)^2}-\frac{8be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log\left(c(d+e\right.}{5g(ef-dg)^{5/2}}$$

```
[Out] (-16*b^2*e^2*n^2)/(15*g*(e*f - d*g)^2*Sqrt[f + g*x]) + (64*b^2*e^(5/2)*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*g*(e*f - d*g)^(5/2))
+ (8*b^2*e^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(5
*g*(e*f - d*g)^(5/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(15*g*(e*f - d
*g)*(f + g*x)^(3/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d
*g)^2*Sqrt[f + g*x]) - (8*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b
*Log[c*(d + e*x)^n])^2)/(5*g*(f + g*x)^(5/2)) - (16*b^2*e^(5/2)*n^2*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x]
)/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5/2)) - (8*b^2*e^(5/2)*n^2*PolyLog[2
, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5
/2))
```

Rubi [A] time = 1.51176, antiderivative size = 503, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{8b^2e^{5/2}n^2\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{5g(ef-dg)^{5/2}}+\frac{8be^2n\,(a+b\log\left(c(d+ex)^n\right))}{5g\sqrt{f+gx}(ef-dg)^2}-\frac{8be^{5/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log\left(c(d+e\right.}{5g(ef-dg)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(7/2),x]
```

```
[Out] (-16*b^2*e^2*n^2)/(15*g*(e*f - d*g)^2*Sqrt[f + g*x]) + (64*b^2*e^(5/2)*n^2*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*g*(e*f - d*g)^(5/2))
+ (8*b^2*e^(5/2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(5
*g*(e*f - d*g)^(5/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(15*g*(e*f - d
*g)*(f + g*x)^(3/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d
*g)^2*Sqrt[f + g*x]) - (8*b*e^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(5*g*(e*f - d*g)^(5/2)) - (2*(a + b
*Log[c*(d + e*x)^n])^2)/(5*g*(f + g*x)^(5/2)) - (16*b^2*e^(5/2)*n^2*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x]
)/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5/2)) - (8*b^2*e^(5/2)*n^2*PolyLog[2
, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(5*g*(e*f - d*g)^(5
/2))
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
```

```
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{7/2}}\,dx = -\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx}{5g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} + \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{5g}$$

$$= -\frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{5(ef-dg)} + \frac{(4ben)\,\mathrm{Subst}}{}$$

$$= \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}} - \frac{2(a+b\log(c(d+ex)^n))^2}{5g(f+gx)^{5/2}} - \frac{(4ben)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\right.}{5(ef-dg)^2}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}} + \frac{8be^2n(a+b\log(c(d+ex)^n))}{5g(ef-dg)^2\sqrt{f+gx}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}} + \frac{8be^2n(a+b\log(c(d+ex)^n))}{5g(ef-dg)^2\sqrt{f+gx}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8ben(a+b\log(c(d+ex)^n))}{15g(ef-dg)(f+gx)^{3/2}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5g(ef-dg)^{5/2}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5g(ef-dg)^{5/2}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5g(ef-dg)^{5/2}}$$

$$= -\frac{16b^2e^2n^2}{15g(ef-dg)^2\sqrt{f+gx}} + \frac{64b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{15g(ef-dg)^{5/2}} + \frac{8b^2e^{5/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{5g(ef-dg)^{5/2}}$$

Mathematica [C] time = 2.24014, size = 639, normalized size = 1.27

$$2\left(\frac{ben(f+gx)\left(-3be^{3/2}n(f+gx)^{3/2}\left(2\operatorname{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}+1\right)\right)\right)\right)+3be^{3/2}n(f+gx)\cdots}{\cdots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(7/2),x]
```

```
[Out] (2*(-3*(a + b*Log[c*(d + e*x)^n])^2 + (b*e*n*(f + g*x)*(24*b*e^(3/2)*n*(f +
 g*x)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] - 8*b*e*Sqrt[e
*f - d*g]*n*(f + g*x)*Hypergeometric2F1[-1/2, 1, 1/2, (e*(f + g*x))/(e*f -
d*g)] + 4*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n]) + 12*e*Sqrt[e*f - d*
g]*(f + g*x)*(a + b*Log[c*(d + e*x)^n]) + 6*e^(3/2)*(f + g*x)^(3/2)*(a + b*
Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 6*e^(3/2
)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*
Sqrt[f + g*x]] - 3*b*e^(3/2)*n*(f + g*x)^(3/2)*(Log[Sqrt[e*f - d*g] - Sqrt[
e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(1
+ (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt[e
]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 3*b*e^(3/2)*n*(f + g*x)^(3/2)*(Log
[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sq
rt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) +
2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])))/(e*f - d*g
)^(5/2)))/(15*g*(f + g*x)^(5/2))
```

Maple [F] time = 0.913, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\left(gx+f\right)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\,\sqrt{gx+f}\,ab\log\left(\left(ex+d\right)^{n}c\right)+\sqrt{gx+f}\,a^{2}}{g^{4}x^{4}+4\,fg^{3}x^{3}+6\,f^{2}g^{2}x^{2}+4\,f^{3}gx+f^{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^4*x^4 + 4*f*g^3*x^3 + 6*f^2*g^2*x^2
+ 4*f^3*g*x + f^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log\left((ex+d)^n c\right)+a\right)^2}{\left(gx+f\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(7/2), x)
```

3.151 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{9/2}} dx$

Optimal. Leaf size=583

$$-\frac{8b^2e^{7/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{7g(ef-dg)^{7/2}}+\frac{8be^3n\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{8be^2n\left(a+b\log\left(c(d+ex)^n\right)\right)}{21g(f+gx)^{3/2}(ef-dg)^2}-\frac{8be^{7/2}n\tanh}{}$$

```
[Out] (-16*b^2*e^2*n^2)/(105*g*(e*f - d*g)^2*(f + g*x)^(3/2)) - (128*b^2*e^3*n^2)
/(105*g*(e*f - d*g)^3*Sqrt[f + g*x]) + (368*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(105*g*(e*f - d*g)^(7/2)) + (8*b^2*e^(7/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(7*g*(e*f - d*g)
^(7/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(35*g*(e*f - d*g)*(f + g*x)^
(5/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(21*g*(e*f - d*g)^2*(f + g*
x)^(3/2)) + (8*b*e^3*n*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^3*Sqrt[
f + g*x]) - (8*b*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^(7/2)) - (2*(a + b*Log[c*(d +
 e*x)^n])^2)/(7*g*(f + g*x)^(7/2)) - (16*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e]*S
qrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
- d*g])])/(7*g*(e*f - d*g)^(7/2)) - (8*b^2*e^(7/2)*n^2*PolyLog[2, 1 - 2/(1
- (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(7*g*(e*f - d*g)^(7/2))
```

Rubi [A] time = 1.84839, antiderivative size = 583, normalized size of antiderivative = 1., number of steps used = 25, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{8b^2e^{7/2}n^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{7g(ef-dg)^{7/2}}+\frac{8be^3n\left(a+b\log\left(c(d+ex)^n\right)\right)}{7g\sqrt{f+gx}(ef-dg)^3}+\frac{8be^2n\left(a+b\log\left(c(d+ex)^n\right)\right)}{21g(f+gx)^{3/2}(ef-dg)^2}-\frac{8be^{7/2}n\tanh}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(9/2),x]
```


```
[Out] (-16*b^2*e^2*n^2)/(105*g*(e*f - d*g)^2*(f + g*x)^(3/2)) - (128*b^2*e^3*n^2)
/(105*g*(e*f - d*g)^3*Sqrt[f + g*x]) + (368*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e
]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(105*g*(e*f - d*g)^(7/2)) + (8*b^2*e^(7/
2)*n^2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(7*g*(e*f - d*g)
^(7/2)) + (8*b*e*n*(a + b*Log[c*(d + e*x)^n]))/(35*g*(e*f - d*g)*(f + g*x)^
(5/2)) + (8*b*e^2*n*(a + b*Log[c*(d + e*x)^n]))/(21*g*(e*f - d*g)^2*(f + g*
x)^(3/2)) + (8*b*e^3*n*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^3*Sqrt[
f + g*x]) - (8*b*e^(7/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]
*(a + b*Log[c*(d + e*x)^n]))/(7*g*(e*f - d*g)^(7/2)) - (2*(a + b*Log[c*(d +
 e*x)^n])^2)/(7*g*(f + g*x)^(7/2)) - (16*b^2*e^(7/2)*n^2*ArcTanh[(Sqrt[e]*S
qrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
- d*g])])/(7*g*(e*f - d*g)^(7/2)) - (8*b^2*e^(7/2)*n^2*PolyLog[2, 1 - 2/(1
- (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(7*g*(e*f - d*g)^(7/2))
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
```

```
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)^{9/2}}\,dx = -\frac{2\,(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} + \frac{(4ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{7/2}}\,dx}{7g}$$

$$= -\frac{2\,(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} + \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{7/2}}\,dx, x, d+ex\right)}{7g}$$

$$= -\frac{2\,(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} - \frac{(4bn)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{7/2}}\,dx, x, d+ex\right)}{7(ef-dg)} + \frac{(4ben)\,\mathrm{Subst}}{}$$

$$= \frac{8ben\,(a+b\log(c(d+ex)^n))}{35g(ef-dg)(f+gx)^{5/2}} - \frac{2\,(a+b\log(c(d+ex)^n))^2}{7g(f+gx)^{7/2}} - \frac{(4ben)\,\mathrm{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\right.}{7(ef-dg)^2}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} + \frac{8ben\,(a+b\log(c(d+ex)^n))}{35g(ef-dg)(f+gx)^{5/2}} + \frac{8be^2n\,(a+b\log(c(d+ex)}{21g(ef-dg)^2(f+gx)^{3/}}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{8ben\,(a+b\log(c(d+ex)^n))}{35g(ef-dg)(f+gx)^{5/2}} +$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{8ben\,(a+b\log(c(d+ex)^n))}{35g(ef-dg)(f+gx)^{5/2}} +$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}$$

$$= -\frac{16b^2e^2n^2}{105g(ef-dg)^2(f+gx)^{3/2}} - \frac{128b^2e^3n^2}{105g(ef-dg)^3\sqrt{f+gx}} + \frac{368b^2e^{7/2}n^2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{105g(ef-dg)^{7/2}}$$

Mathematica [C] time = 3.9823, size = 728, normalized size = 1.25

$$2\left(\frac{ben(f+gx)\left(-15be^{5/2}n(f+gx)^{5/2}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}+1\right)\right)\right)\right)+15be^{5/2}n(f+g\cdots}{\cdots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x)^(9/2),x]
```

```
[Out] (2*(-15*(a + b*Log[c*(d + e*x)^n])^2 + (b*e*n*(f + g*x)*(120*b*e^(5/2)*n*(f
 + g*x)^(5/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]] - 8*b*e*(e*f
 - d*g)^(3/2)*n*(f + g*x)*Hypergeometric2F1[-3/2, 1, -1/2, (e*(f + g*x))/(e
*f - d*g)] - 40*b*e^2*Sqrt[e*f - d*g]*n*(f + g*x)^2*Hypergeometric2F1[-1/2,
 1, 1/2, (e*(f + g*x))/(e*f - d*g)] + 12*(e*f - d*g)^(5/2)*(a + b*Log[c*(d
+ e*x)^n]) + 20*e*(e*f - d*g)^(3/2)*(f + g*x)*(a + b*Log[c*(d + e*x)^n]) +
60*e^2*Sqrt[e*f - d*g]*(f + g*x)^2*(a + b*Log[c*(d + e*x)^n]) + 30*e^(5/2)*
(f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sq
rt[f + g*x]] - 30*e^(5/2)*(f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sq
rt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - 15*b*e^(5/2)*n*(f + g*x)^(5/2)*(Lo
g[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*S
qrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2
*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 15*b*e^(5
/2)*n*(f + g*x)^(5/2)*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sq
rt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x]
)/(2*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*
f - d*g])/2]))))/(e*f - d*g)^(7/2)))/(105*g*(f + g*x)^(7/2))
```

Maple [F] time = 0.92, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)^{2}\left(gx+f\right)^{-\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}b^2\log\left((ex+d)^nc\right)^2+2\sqrt{gx+f}ab\log\left((ex+d)^nc\right)+\sqrt{gx+f}a^2}{g^5x^5+5fg^4x^4+10f^2g^3x^3+10f^3g^2x^2+5f^4gx+f^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x + f)*b^2*log((e*x + d)^n*c)^2 + 2*sqrt(g*x + f)*a*b*log(
(e*x + d)^n*c) + sqrt(g*x + f)*a^2)/(g^5*x^5 + 5*f*g^4*x^4 + 10*f^2*g^3*x^3
 + 10*f^3*g^2*x^2 + 5*f^4*g*x + f^5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2}{\left(gx+f\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f)^(9/2), x)
```

3.152 $\int \frac{(f+gx)^{3/2}}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi [A] time = 0.0414031, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Defer[Int][(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 1.03485, size = 0, normalized size = 0.

$$\int \frac{(f+gx)^{3/2}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Integrate[(f + g*x)^(3/2)/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A] time = 0.723, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\,(ex+d)^n\right)}\left(gx+f\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\frac{2\left(g^2x^2 + 2\,fgx + f^2\right)\sqrt{gx+f}}{5\left(bg\log\left((ex+d)^n\right) + bg\log\left(c\right) + ag\right)} + \int \frac{2\left(beg\right.}{5\left(b^2dg\log\left(c\right)^2 + 2\,abdg\log\left(c\right) + a^2dg + \left(b^2egx + b^2dg\right)\log\left((ex+d)^n\right)^2 + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 2/5*(g^2*x^2 + 2*f*g*x + f^2)*sqrt(g*x + f)/(b*g*log((e*x + d)^n) + b*g*log
(c) + a*g) + integrate(2/5*(b*e*g^2*n*x^2 + 2*b*e*f*g*n*x + b*e*f^2*n)*sqrt
(g*x + f)/(b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2*e*g*x + b^2
*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 + 2*a*b*e*g*log(c) + a^2*e*g)*
x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log(c) + a*b*e*g)*x)*log((e*x +
d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(gx+f\right)^{\frac{3}{2}}}{b\log\left((ex+d)^n c\right) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^(3/2)/(b*log((e*x + d)^n*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^{\frac{3}{2}}}{b\log\left((ex+d)^n c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)/(b*log((e*x + d)^n*c) + a), x)
```

3.153 $\int \frac{\sqrt{f+gx}}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi [A] time = 0.0375366, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Defer[Int][Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx = \int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.856616, size = 0, normalized size = 0.

$$\int \frac{\sqrt{f+gx}}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Integrate[Sqrt[f + g*x]/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A] time = 0.69, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\left(ex+d\right)^n\right)}\sqrt{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\frac{2\left(gx+f\right)^{\frac{3}{2}}}{3\left(bg\log\left(\left(ex+d\right)^{n}\right)+bg\log\left(c\right)+ag\right)}+\int\frac{}{3\left(b^{2}dg\log\left(c\right)^{2}+2\,abdg\log\left(c\right)+a^{2}dg+\left(b^{2}egx+b^{2}dg\right)\log\left(\left(ex+d\right)^{n}\right)^{2}+\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 2/3*(g*x + f)^(3/2)/(b*g*log((e*x + d)^n) + b*g*log(c) + a*g) + integrate(2
/3*(b*e*g*n*x + b*e*f*n)*sqrt(g*x + f)/(b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c)
 + a^2*d*g + (b^2*e*g*x + b^2*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 +
 2*a*b*e*g*log(c) + a^2*e*g)*x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log
(c) + a*b*e*g)*x)*log((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}}{b\log\left(\left(ex+d\right)^{n}c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)/(b*log((e*x + d)^n*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{gx+f}}{b\log\left(\left(ex+d\right)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)/(b*log((e*x + d)^n*c) + a), x)
```

3.154 $\int \frac{1}{\sqrt{f+gx}(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{1}{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))},x\right)$$

```
[Out] Unintegrable[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi [A] time = 0.0388233, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Defer[Int][1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}\,dx=\int \frac{1}{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}\,dx$$

Mathematica [A] time = 1.23164, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 0.68, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\,(ex+d)^n\right)}\frac{1}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(e*x+d)^n))/(g*x+f)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\frac{2\sqrt{gx+f}}{bg\log\left((ex+d)^n\right)+bg\log(c)+ag}+\int\frac{}{\left(b^2dg\log(c)^2+2\,abdg\log(c)+a^2dg+\left(b^2egx+b^2dg\right)\log\left((ex+d)^n\right)^2+\left(b^2eg\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(g*x + f)/(b*g*log((e*x + d)^n) + b*g*log(c) + a*g) + integrate(2*(b*
e*g*n*x + b*e*f*n)/((b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2*e
*g*x + b^2*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 + 2*a*b*e*g*log(c) +
 a^2*e*g)*x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log(c) + a*b*e*g)*x)*l
og((e*x + d)^n))*sqrt(g*x + f)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}}{agx+af+\left(bgx+bf\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(e*x+d)**n))/(g*x+f)**(1/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{gx+f}\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(e*x+d)^n))/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

3.155 $\int \frac{1}{(f+gx)^{3/2}(a+b\log(c(d+ex)^n))} \, dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi [A] time = 0.0424962, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Defer[Int][1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)} \, dx = \int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)} \, dx$$

Mathematica [A] time = 1.3744, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 0.668, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\left(ex+d\right)^{n}\right)}\left(gx+f\right)^{-\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-2\,ben\int \frac{1}{\left(b^2dg\log(c)^2+2\,abdg\log(c)+a^2dg+\left(b^2egx+b^2dg\right)\log\left((ex+d)^n\right)^2+\left(b^2eg\log(c)^2+2\,abeg\log(c)+a^2eg\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -2*b*e*n*integrate(1/((b^2*d*g*log(c)^2 + 2*a*b*d*g*log(c) + a^2*d*g + (b^2
*e*g*x + b^2*d*g)*log((e*x + d)^n)^2 + (b^2*e*g*log(c)^2 + 2*a*b*e*g*log(c)
 + a^2*e*g)*x + 2*(b^2*d*g*log(c) + a*b*d*g + (b^2*e*g*log(c) + a*b*e*g)*x)
*log((e*x + d)^n))*sqrt(g*x + f)), x) - 2/((b*g*log((e*x + d)^n) + b*g*log(
c) + a*g)*sqrt(g*x + f))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}}{ag^2x^2+2\,afgx+af^2+\left(bg^2x^2+2\,bfgx+bf^2\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(g*x + f)/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (b*g^2*x^2 + 2*b*f*
g*x + b*f^2)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)\left(f+gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)**(3/2)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)^{\frac{3}{2}}\left(b\log\left((ex+d)^nc\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a)), x)
```

3.156 $\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=82

$$\frac{2(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3g}-\frac{ben\text{Unintegrable}\left(\frac{(f+gx)^{3/2}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{3g}$$

```
[Out] (2*(f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*g) - (b*e*n*Unintegra
ble[(f + g*x)^(3/2)/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(3*g)
```

Rubi [A] time = 0.264688, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] (2*(f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]])/(3*g) - (b*e*n*Defer[Int
][(f + g*x)^(3/2)/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/(3*g)
```

Rubi steps

$$\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx=\frac{2(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{3g}-\frac{(ben)\int\frac{(f+gx)^{3/2}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{3g}$$

Mathematica [A] time = 1.36404, size = 0, normalized size = 0.

$$\int \sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Integrate[Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Maple [A] time = 0.881, size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")

[Out] integrate(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")

[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))**(1/2),x)

[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\sqrt{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")

[Out] integrate(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.157 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{\sqrt{f+gx}}\,dx$

Optimal. Leaf size=78

$$\frac{2\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g}-\frac{ben\text{Unintegrable}\left(\frac{\sqrt{f+gx}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{g}$$

```
[Out] (2*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]])/g - (b*e*n*Unintegrable[Sq
rt[f + g*x]/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi [A] time = 0.243462, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{f+gx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x],x]
```

```
[Out] (2*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]])/g - (b*e*n*Defer[Int][Sqrt
[f + g*x]/((d + e*x)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{f+gx}}\,dx=\frac{2\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g}-\frac{(ben)\int \frac{\sqrt{f+gx}}{(d+ex)\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{g}$$

Mathematica [A] time = 1.52692, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{\sqrt{f+gx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x],x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/Sqrt[f + g*x], x]
```

Maple [A] time = 0.799, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\frac{1}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/sqrt(g*x + f), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d+ex\right)^{n}\right)}}{\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/sqrt(f + g*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left((ex+d)^n c\right)+a}}{\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/sqrt(g*x + f), x)
```

3.158 $\int \frac{\sqrt{a+b\log(c(d+ex)^n)}}{(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=77

$$\frac{ben\text{Unintegrable}\left(\frac{1}{(d+ex)\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}},x\right)}{g}-\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g\sqrt{f+gx}}$$

```
[Out] (-2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(g*Sqrt[f + g*x]) + (b*e*n*Unintegrable
[1/((d + e*x)*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi [A] time = 0.256699, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*Log[c*(d + e*x)^n]])/(g*Sqrt[f + g*x]) + (b*e*n*Defer[Int][1
/((d + e*x)*Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x])/g
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx=-\frac{2\sqrt{a+b\log\left(c(d+ex)^n\right)}}{g\sqrt{f+gx}}+\frac{(ben)\int \frac{1}{(d+ex)\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}}\,dx}{g}$$

Mathematica [A] time = 1.28669, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c(d+ex)^n\right)}}{(f+gx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2),x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d + e*x)^n]]/(f + g*x)^(3/2), x]
```

Maple [A] time = 0.777, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\left(gx+f\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left((ex+d)^n c\right) + a}}{\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a + b \log\left(c \left(d + ex\right)^{n}\right)}}{\left(f + gx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**(1/2)/(g*x+f)**(3/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d + e*x)**n))/(f + g*x)**(3/2), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left((ex+d)^n c\right) + a}}{\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^(1/2)/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)/(g*x + f)^(3/2), x)
```

3.159 $\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi [A] time = 0.0546673, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Defer[Int][Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 5.10567, size = 0, normalized size = 0.

$$\int \frac{\sqrt{f+gx}}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Integrate[Sqrt[f + g*x]/Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Maple [A] time = 0.803, size = 0, normalized size = 0.

$$\int \sqrt{gx+f}\frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{gx+f}}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{gx+f}}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.160 $\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi [A] time = 0.0556426, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Defer[Int][1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 2.80685, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{f+gx}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Integrate[1/(Sqrt[f + g*x]*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Maple [A] time = 0.841, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{gx+f}}\frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(g*x+f)^(1/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{gx+f}\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\log\left(c\,(d+ex)^n\right)}\sqrt{f+gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(1/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d + e*x)**n))*sqrt(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{gx+f}\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(1/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(g*x + f)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

3.161 $\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi [A] time = 0.0578403, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Defer[Int][1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx = \int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 0.74405, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)^{3/2}\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]),x]
```

```
[Out] Integrate[1/((f + g*x)^(3/2)*Sqrt[a + b*Log[c*(d + e*x)^n]]), x]
```

Maple [A] time = 0.841, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{-\frac{3}{2}}\frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^{n}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int(1/(g*x+f)^(3/2)/(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^{\frac{3}{2}}\sqrt{b\log\left((ex+d)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((g*x + f)^(3/2)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)**(3/2)/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)^{\frac{3}{2}}\sqrt{b\log\left((ex+d)^{n}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)^(3/2)/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)^(3/2)*sqrt(b*log((e*x + d)^n*c) + a)), x)
```

3.162 $\int (f+gx)^m (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=94

$$\frac{(f+gx)^{m+1}(a+b\log(c(d+ex)^n))}{g(m+1)}+\frac{ben(f+gx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{g(m+1)(m+2)(ef-dg)}$$

```
[Out] (b*e*n*(f + g*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (e*(f + g*x))/(
e*f - d*g)])/(g*(e*f - d*g)*(1 + m)*(2 + m)) + ((f + g*x)^(1 + m)*(a + b*Lo
g[c*(d + e*x)^n]))/(g*(1 + m))
```

Rubi [A] time = 0.0499173, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2395, 68}

$$\frac{(f+gx)^{m+1}(a+b\log(c(d+ex)^n))}{g(m+1)}+\frac{ben(f+gx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{g(m+1)(m+2)(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*e*n*(f + g*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (e*(f + g*x))/(
e*f - d*g)])/(g*(e*f - d*g)*(1 + m)*(2 + m)) + ((f + g*x)^(1 + m)*(a + b*Lo
g[c*(d + e*x)^n]))/(g*(1 + m))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\begin{aligned}\int (f+gx)^m(a+b\log(c(d+ex)^n))\,dx &= \frac{(f+gx)^{1+m}(a+b\log(c(d+ex)^n))}{g(1+m)}-\frac{(ben)\int\frac{(f+gx)^{1+m}}{d+ex}\,dx}{g(1+m)}\\ &= \frac{ben(f+gx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{e(f+gx)}{ef-dg}\right)}{g(ef-dg)(1+m)(2+m)}+\frac{(f+gx)^{1+m}(a+b\log(c(d-}{g(1+m)}\end{aligned}$$

Mathematica [A] time = 0.084991, size = 81, normalized size = 0.86

$$\frac{(f+gx)^{m+1}\left(a+b\log(c(d+ex)^n)+\frac{ben(f+gx)\,{}_2F_1\left(1,m+2;m+3;\frac{e(f+gx)}{ef-dg}\right)}{(m+2)(ef-dg)}\right)}{g(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] ((f + g*x)^(1 + m)*(a + (b*e*n*(f + g*x)*Hypergeometric2F1[1, 2 + m, 3 + m,
 (e*(f + g*x))/(e*f - d*g)])/((e*f - d*g)*(2 + m)) + b*Log[c*(d + e*x)^n]))
/(g*(1 + m))
```

Maple [F] time = 1.049, size = 0, normalized size = 0.

$$\int (gx+f)^m \left(a+b\ln\left(c(ex+d)^n\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((gx+f)^m b\log\left((ex+d)^n c\right)+(gx+f)^m a, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m*b*log((e*x + d)^n*c) + (g*x + f)^m*a, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\log\left(c(d+ex)^n\right)\right)(f+gx)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*x)**m, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

3.163 $\int \frac{(f+gx)^m}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi [A] time = 0.0273663, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.318583, size = 0, normalized size = 0.

$$\int \frac{(f+gx)^m}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A] time = 1.148, size = 0, normalized size = 0.

$$\int \frac{\left(gx+f\right)^m}{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(gx+f)^m}{b\log\left((ex+d)^n c\right)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m/(b*log((e*x + d)^n*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a), x)
```

3.164 $\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2},x\right)$$

```
[Out] Unintegrable[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Rubi [A] time = 0.0268786, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx=\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Mathematica [A] time = 2.64185, size = 0, normalized size = 0.

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Maple [A] time = 6.036, size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{(ex+d)(gx+f)^m}{b^2en\log\left((ex+d)^n\right)+b^2en\log(c)+aben}+\int\frac{\left(eg(m+1)x+dgm+ef\right)(gx+f)^m}{b^2efn\log(c)+abefn+\left(b^2egn\log(c)+abegn\right)x+\left(b^2egnx+b^2efn\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)*(g*x + f)^m/(b^2*e*n*log((e*x + d)^n) + b^2*e*n*log(c) + a*b*e*n
) + integrate((e*g*(m + 1)*x + d*g*m + e*f)*(g*x + f)^m/(b^2*e*f*n*log(c) +
 a*b*e*f*n + (b^2*e*g*n*log(c) + a*b*e*g*n)*x + (b^2*e*g*n*x + b^2*e*f*n)*l
og((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(gx+f)^m}{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m/(b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) +
 a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{(gx+f)^m}{\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a)^2, x)
```

3.165 $\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left((f+gx)^m (a+b\log(c(d+ex)^n))^{3/2},x\right)$$

```
[Out] Unintegrable[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi [A] time = 0.0530024, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2),x]

[Out] Defer[Int][(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi steps

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx = \int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$$

Mathematica [A] time = 5.7506, size = 0, normalized size = 0.

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^{3/2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2),x]

[Out] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Maple [A] time = 0.88, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^m \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(3/2),x)

[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)*(g*x + f)^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(\left(gx+f\right)^m b\log\left((ex+d)^n c\right)+\left(gx+f\right)^m a\right)\sqrt{b\log\left((ex+d)^n c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(((g*x + f)^m*b*log((e*x + d)^n*c) + (g*x + f)^m*a)*sqrt(b*log((e*x
 + d)^n*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^(3/2)*(g*x + f)^m, x)
```

3.166 $\int (f+gx)^m \sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left((f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi [A] time = 0.0426145, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Defer[Int][(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Rubi steps

$$\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx=\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.0637772, size = 0, normalized size = 0.

$$\int (f+gx)^m\sqrt{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]],x]
```

```
[Out] Integrate[(f + g*x)^m*Sqrt[a + b*Log[c*(d + e*x)^n]], x]
```

Maple [A] time = 0.812, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^m\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

```
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\left(gx+f\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{b\log\left((ex+d)^n c\right)+a}\left(gx+f\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left((ex+d)^n c\right)+a}\left(gx+f\right)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m, x)
```

3.167 $\int \frac{(f+gx)^m}{\sqrt{a+b\log(c(d+ex)^n)}}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}},x\right)$$

[Out] Unintegrable[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]

Rubi [A] time = 0.0458975, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

[In] Int[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]],x]

[Out] Defer[Int][(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]

Rubi steps

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx=\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Mathematica [A] time = 3.07149, size = 0, normalized size = 0.

$$\int \frac{(f+gx)^m}{\sqrt{a+b\log\left(c(d+ex)^n\right)}}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]],x]

[Out] Integrate[(f + g*x)^m/Sqrt[a + b*Log[c*(d + e*x)^n]], x]

Maple [A] time = 0.799, size = 0, normalized size = 0.

$$\int (gx+f)^m \frac{1}{\sqrt{a+b\ln\left(c\left(ex+d\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(1/2),x)

[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(1/2),x)

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^m/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(gx+f)^m}{\sqrt{b\log\left((ex+d)^n c\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((g*x + f)^m/sqrt(b*log((e*x + d)^n*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{\sqrt{b\log\left((ex+d)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/sqrt(b*log((e*x + d)^n*c) + a), x)
```

3.168 $\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$

Optimal. Leaf size=28

$$\text{Unintegrable}\left(\frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}},x\right)$$

```
[Out] Unintegrable[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi [A] time = 0.0542058, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] Defer[Int][(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Rubi steps

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx=\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$$

Mathematica [A] time = 2.50558, size = 0, normalized size = 0.

$$\int \frac{(f+gx)^m}{(a+b\log(c(d+ex)^n))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2),x]
```

```
[Out] Integrate[(f + g*x)^m/(a + b*Log[c*(d + e*x)^n])^(3/2), x]
```

Maple [A] time = 0.854, size = 0, normalized size = 0.

$$\int (gx+f)^m\left(a+b\ln\left(c(ex+d)^n\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

```
[Out] int((g*x+f)^m/(a+b*ln(c*(e*x+d)^n))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{b\log\left((ex+d)^n c\right)+a}\,(gx+f)^m}{b^2\log\left((ex+d)^n c\right)^2+2\,ab\log\left((ex+d)^n c\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*log((e*x + d)^n*c) + a)*(g*x + f)^m/(b^2*log((e*x + d)^n*c)
^2 + 2*a*b*log((e*x + d)^n*c) + a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m/(a+b*ln(c*(e*x+d)**n))**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^m}{\left(b\log\left((ex+d)^n c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m/(a+b*log(c*(e*x+d)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^m/(b*log((e*x + d)^n*c) + a)^(3/2), x)
```

3.169 $\int (f+gx)^m (a+b\log(c(d+ex)^n))^n \, dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left((f+gx)^m (a+b\log(c(d+ex)^n))^n, x\right)$$

```
[Out] Unintegrable[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]
```

Rubi [A] time = 0.0262465, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] Defer[Int][(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]
```

Rubi steps

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^n \, dx = \int (f+gx)^m (a+b\log(c(d+ex)^n))^n \, dx$$

Mathematica [A] time = 0.458377, size = 0, normalized size = 0.

$$\int (f+gx)^m (a+b\log(c(d+ex)^n))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] Integrate[(f + g*x)^m*(a + b*Log[c*(d + e*x)^n])^n, x]
```

Maple [A] time = 0.803, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^m \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)^m*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**m*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^m*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.170 $\int (f+gx)^3 (a+b\log(c(d+ex)^n))^n \, dx$

Optimal. Leaf size=474

$$\frac{g^2 3^{-n} e^{-\frac{3a}{bn}} (d+ex)^3 (ef-dg) \left(c(d+ex)^n\right)^{-3/n} \left(a+b\log\left(c(d+ex)^n\right)\right)^n \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n} \text{Gamma}\left(n+1, -\frac{3(a+b\log(c(d+ex}{bn}\right.}{e^4}$$

```
[Out] (4^(-1 - n)*g^3*(d + e*x)^4*Gamma[1 + n, (-4*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^((4*a)/(b*n))*(c*(d + e*x)^n)^(4/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g^2*(e*f - d*g)*(d + e*x)^3*
Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^
n])^n)/(3^n*e^4*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n) + (3*2^(-1 - n)*g*(e*f - d*g)^2*(d + e*x)^2*Gamma[1 + n
, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4
*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n))
)^n) + ((e*f - d*g)^3*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(
b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rubi [A] time = 0.548706, antiderivative size = 474, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2401, 2389, 2300, 2181, 2390, 2310}

$$\frac{g^2 3^{-n} e^{-\frac{3a}{bn}} (d+ex)^3 (ef-dg) \left(c(d+ex)^n\right)^{-3/n} \left(a+b\log\left(c(d+ex)^n\right)\right)^n \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n} \text{Gamma}\left(n+1, -\frac{3(a+b\log(c(d+ex}{bn}\right.}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (4^(-1 - n)*g^3*(d + e*x)^4*Gamma[1 + n, (-4*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^((4*a)/(b*n))*(c*(d + e*x)^n)^(4/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g^2*(e*f - d*g)*(d + e*x)^3*
Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^
n])^n)/(3^n*e^4*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n) + (3*2^(-1 - n)*g*(e*f - d*g)^2*(d + e*x)^2*Gamma[1 + n
, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4
*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n))
)^n) + ((e*f - d*g)^3*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(
b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^4*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1
)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)^3 (a+b\log(c(d+ex)^n))^n\, dx = \int \left(\frac{(ef-dg)^3 (a+b\log(c(d+ex)^n))^n}{e^3} + \frac{3g(ef-dg)^2(d+ex)(a+b\log(c\right.$$

$$= \frac{g^3 \int (d+ex)^3 (a+b\log(c(d+ex)^n))^n\, dx}{e^3} + \frac{\left(3g^2(ef-dg)\right)\int (d+ex)^2 (a+}{e^3}$$

$$= \frac{g^3\, \text{Subst}\left(\int x^3 (a+b\log(cx^n))^n\, dx, x, d+ex\right)}{e^4} + \frac{\left(3g^2(ef-dg)\right)\text{Subst}\left(\int\right.}{}$$

$$= \frac{\left(g^3(d+ex)^4 (c(d+ex)^n)^{-4/n}\right)\text{Subst}\left(\int e^{\frac{4x}{n}} (a+bx)^n\, dx, x, \log(c(d+ex)^n)\right)}{e^4 n}$$

$$= \frac{4^{-1-n} e^{-\frac{4a}{bn}} g^3 (d+ex)^4 (c(d+ex)^n)^{-4/n}\, \Gamma\left(1+n, -\frac{4(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log}{e^4}$$

Mathematica [A] time = 1.74115, size = 343, normalized size = 0.72

$$\frac{3^{-n} 4^{-n-1} e^{-\frac{4a}{bn}} (d+ex)(c(d+ex)^n)^{-4/n} (a+b\log(c(d+ex)^n))^n \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n} \left(2^{n+1} e^{\frac{a}{bn}} (ef-dg)(c(d+ex)^n)^{\frac{1}{n}} \left(3^n\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^3*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (4^(-1 - n)*(d + e*x)*(3^n*g^3*(d + e*x)^3*Gamma[1 + n, (-4*(a + b*Log[c*(d
 + e*x)^n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(
-1)*(2^(1 + n)*g^2*(d + e*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))
/(b*n)] + 3^n*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*(3*g*(d + e*x)
*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n)
```

```
)*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^
n])/(b*n))]])))*(a + b*Log[c*(d + e*x)^n])^n)/(3^n*e^4*E^((4*a)/(b*n))*(c*(d
 + e*x)^n)^(4/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Maple [F] time = 0.938, size = 0, normalized size = 0.

$$\int (gx+f)^3 \left(a+b\ln\left(c\,(ex+d)^n\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)^3*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(g^3x^3+3\,fg^2x^2+3\,f^2gx+f^3\right)\left(b\log\left((ex+d)^nc\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g^3*x^3 + 3*f*g^2*x^2 + 3*f^2*g*x + f^3)*(b*log((e*x + d)^n*c) +
a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**3*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(gx+f\right)^{3}\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^3*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^3*(b*log((e*x + d)^n*c) + a)^n, x)
```

3.171 $\int (f+gx)^2 (a+b\log(c(d+ex)^n))^n \, dx$

Optimal. Leaf size=348

$$\frac{g2^{-n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d+ex)^n}{bn}\right.}{e^3}$$

```
[Out] (3^(-1 - n)*g^2*(d + e*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g*(e*f - d*g)*(d + e*x)^2*Ga
mma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n]
)^n)/(2^n*e^3*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*
x)^n])/(b*n)))^n) + ((e*f - d*g)^2*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d
 + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^(a/(b*n))*(c*(d +
e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Rubi [A] time = 0.363763, antiderivative size = 348, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2401, 2389, 2300, 2181, 2390, 2310}

$$\frac{g2^{-n}e^{-\frac{2a}{bn}}(d+ex)^2(ef-dg)\left(c(d+ex)^n\right)^{-2/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2(a+b\log(c(d+ex)^n}{bn}\right.}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^n,x]
```


```
[Out] (3^(-1 - n)*g^2*(d + e*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d + e*x)^n]))/(b
*n)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^((3*a)/(b*n))*(c*(d + e*x)^n)^(3/
n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + (g*(e*f - d*g)*(d + e*x)^2*Ga
mma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)]*(a + b*Log[c*(d + e*x)^n]
)^n)/(2^n*e^3*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*
x)^n])/(b*n)))^n) + ((e*f - d*g)^2*(d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d
 + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^3*E^(a/(b*n))*(c*(d +
e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)^2 (a+b\log(c(d+ex)^n))^n \, dx = \int \left(\frac{(ef-dg)^2 (a+b\log(c(d+ex)^n))^n}{e^2} + \frac{2g(ef-dg)(d+ex)(a+b\log(c(d\right.$$

$$= \frac{g^2 \int (d+ex)^2 (a+b\log(c(d+ex)^n))^n \, dx}{e^2} + \frac{(2g(ef-dg)) \int (d+ex)(a+b\log}{e^2}$$

$$= \frac{g^2 \operatorname{Subst}\left(\int x^2 (a+b\log(cx^n))^n \, dx, x, d+ex\right)}{e^3} + \frac{(2g(ef-dg)) \operatorname{Subst}\left(\int x\right.}{}$$

$$= \frac{\left(g^2(d+ex)^3 (c(d+ex)^n)^{-3/n}\right) \operatorname{Subst}\left(\int e^{\frac{3x}{n}} (a+bx)^n \, dx, x, \log(c(d+ex)^n)\right)}{e^3 n}$$

$$= \frac{3^{-1-n} e^{-\frac{3a}{bn}} g^2 (d+ex)^3 (c(d+ex)^n)^{-3/n} \Gamma\left(1+n, -\frac{3(a+b\log(c(d+ex)^n))}{bn}\right) (a+b\log}{e^3}$$

Mathematica [A] time = 0.54241, size = 262, normalized size = 0.75

$$\frac{2^{-n} 3^{-n-1} e^{-\frac{3a}{bn}} (d+ex) (c(d+ex)^n)^{-3/n} (a+b\log(c(d+ex)^n))^n \left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n} \left(3^{n+1} e^{\frac{a}{bn}} (ef-dg) (c(d+ex)^n)^{\frac{1}{n}} \left(2^n\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)^2*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (3^(-1 - n)*(d + e*x)*(2^n*g^2*(d + e*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d
 + e*x)^n]))/(b*n)] + 3^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(
-1)*(g*(d + e*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n)] + 2^n*
E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamma[1 + n, -((a + b*Log[c*
(d + e*x)^n])/(b*n))]))*(a + b*Log[c*(d + e*x)^n])^n)/(2^n*e^3*E^((3*a)/(b*
n))*(c*(d + e*x)^n)^(3/n)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n)
```

Maple [F] time = 1.171, size = 0, normalized size = 0.

$$\int \left(gx+f\right)^2 \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)^2*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(g^2x^2 + 2\,fgx + f^2\right)\left(b\log\left((ex+d)^n c\right) + a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g^2*x^2 + 2*f*g*x + f^2)*(b*log((e*x + d)^n*c) + a)^n, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a + b\log\left(c\left(d + ex\right)^n\right)\right)^n \left(f + gx\right)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**2*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(gx+f\right)^2\left(b\log\left((ex+d)^n c\right) + a\right)^n\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^2*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^2*(b*log((e*x + d)^n*c) + a)^n, x)
```

3.172 $\int (f+gx)(a+b\log(c(d+ex)^n))^n\,dx$

Optimal. Leaf size=225

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e^2}+$$

```
[Out] (2^(-1 - n)*g*(d + e*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n
)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)
*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + ((e*f - d*g)*(d + e*x)*Gamma[1
+ n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^
2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^
n)
```

Rubi [A] time = 0.205189, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2401, 2389, 2300, 2181, 2390, 2310}

$$\frac{e^{-\frac{a}{bn}}(d+ex)(ef-dg)\left(c(d+ex)^n\right)^{-1/n}\left(a+b\log\left(c(d+ex)^n\right)\right)^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^n,x]
```


```
[Out] (2^(-1 - n)*g*(d + e*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^n]))/(b*n
)]*(a + b*Log[c*(d + e*x)^n])^n)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)
*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^n) + ((e*f - d*g)*(d + e*x)*Gamma[1
+ n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(d + e*x)^n])^n)/(e^
2*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d + e*x)^n])/(b*n)))^
n)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
```

```
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rubi steps

$$\int (f+gx)(a+b\log(c(d+ex)^n))^n\,dx = \int \left(\frac{(ef-dg)(a+b\log(c(d+ex)^n))^n}{e} + \frac{g(d+ex)(a+b\log(c(d+ex)^n))^n}{e}\right) dx$$
$$= \frac{g\int (d+ex)(a+b\log(c(d+ex)^n))^n\,dx}{e} + \frac{(ef-dg)\int (a+b\log(c(d+ex)^n))^n\,d}{e}$$
$$= \frac{g\,\mathrm{Subst}\left(\int x(a+b\log(cx^n))^n\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\mathrm{Subst}\left(\int (a+b\log(c\right.}{e^2}$$
$$= \frac{\left(g(d+ex)^2(c(d+ex)^n)^{-2/n}\right)\mathrm{Subst}\left(\int e^{\frac{2x}{n}}(a+bx)^n\,dx, x, \log(c(d+ex)^n)\right)}{e^2 n} + \frac{((e}{}$$
$$= \frac{2^{-1-n}e^{-\frac{2a}{bn}}g(d+ex)^2(c(d+ex)^n)^{-2/n}\,\Gamma\left(1+n, -\frac{2(a+b\log(c(d+ex)^n))}{bn}\right)(a+b\log(c(d}{e^2}$$

Mathematica [A] time = 0.206539, size = 181, normalized size = 0.8

$$\frac{2^{-n-1}e^{-\frac{2a}{bn}}(d+ex)(c(d+ex)^n)^{-2/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\left(2^{n+1}e^{\frac{a}{bn}}(ef-dg)(c(d+ex)^n)^{\frac{1}{n}}\,\mathrm{Gamma}\right(}{e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)*(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] (2^(-1 - n)*(d + e*x)*(g*(d + e*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d + e*x)^
n]))/(b*n)] + 2^(1 + n)*E^(a/(b*n))*(e*f - d*g)*(c*(d + e*x)^n)^n^(-1)*Gamm
a[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))])*(a + b*Log[c*(d + e*x)^n])^n
)/(e^2*E^((2*a)/(b*n))*(c*(d + e*x)^n)^(2/n)*(-((a + b*Log[c*(d + e*x)^n])/
(b*n)))^n)
```

Maple [F] time = 0.957, size = 0, normalized size = 0.

$$\int \left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((g*x+f)*(a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(gx+f\right)\left(b\log\left((ex+d)^n c\right)+a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] integral((g*x + f)*(b*log((e*x + d)^n*c) + a)^n, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^n \left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n*(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(gx+f\right)\left(b\log\left((ex+d)^n c\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((g*x + f)*(b*log((e*x + d)^n*c) + a)^n, x)
```

3.173 $\int (a+b\log (c(d+ex)^n))^n\,dx$

Optimal. Leaf size=103

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,(a+b\log (c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

Rubi [A] time = 0.0595006, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2389, 2300, 2181}

$$\frac{e^{-\frac{a}{bn}}(d+ex)\,(c(d+ex)^n)^{-1/n}\,(a+b\log (c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^n\,dx = \frac{\text{Subst}\left(\int (a+b\log(cx^n))^n\,dx, x, d+ex\right)}{e}$$
$$= \frac{\left((d+ex)(c(d+ex)^n)^{-1/n}\right)\text{Subst}\left(\int e^{\frac{x}{n}}(a+bx)^n\,dx, x, \log(c(d+ex)^n)\right)}{en}$$
$$= \frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\,\Gamma\left(1+n,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b}{}\right.}{e}$$

Mathematica [A] time = 0.0595652, size = 103, normalized size = 1.

$$\frac{e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}(a+b\log(c(d+ex)^n))^n\left(-\frac{a+b\log(c(d+ex)^n)}{bn}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^n,x]
```

```
[Out] ((d + e*x)*Gamma[1 + n, -((a + b*Log[c*(d + e*x)^n])/(b*n))]*(a + b*Log[c*(
d + e*x)^n])^n)/(e*E^(a/(b*n))*(c*(d + e*x)^n)^n^(-1)*(-((a + b*Log[c*(d +
e*x)^n])/(b*n)))^n)
```

Maple [F] time = 0.429, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^n,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.80611, size = 143, normalized size = 1.39

$$\frac{e^{\left(-\frac{bn^2\log\left(-\frac{1}{bn}\right)+b\log(c)+a}{bn}\right)}\Gamma\left(n+1,-\frac{bn\log(ex+d)+b\log(c)+a}{bn}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="fricas")
```

```
[Out] e^(-(b*n^2*log(-1/(b*n)) + b*log(c) + a)/(b*n))*gamma(n + 1, -(b*n*log(e*x
+ d) + b*log(c) + a)/(b*n))/e
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**n,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex + d)^{n}c\right) + a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^n, x)
```

3.174 $\int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^n}{f+gx},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]
```

Rubi [A] time = 0.0293431, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx$$

Mathematica [A] time = 0.252056, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^n}{f+gx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x),x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])^n/(f + g*x), x]
```

Maple [A] time = 1.052, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^n}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^n/(g*x+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^n/(g*x+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)^{n}}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)^n/(g*x + f), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{n}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**n/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**n/(f + g*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^{n}c\right)+a\right)^{n}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^n/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^n/(g*x + f), x)
```

3.175 $\int \frac{(h+ix)^4(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=315

$$\frac{3i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{df^5}+\frac{4i^3(e+fx)^3(fh-ei)(a+b\log(c(e+fx)))}{3df^5}+\frac{(fh-ei)^4\log(e+fx)(a+}{df^5}$$

```
[Out] (-4*b*i*(f*h - e*i)^3*x)/(d*f^4) - (3*b*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d
*f^5) - (4*b*i^3*(f*h - e*i)*(e + f*x)^3)/(9*d*f^5) - (b*i^4*(e + f*x)^4)/(
16*d*f^5) - (b*(f*h - e*i)^4*Log[e + f*x]^2)/(2*d*f^5) + (4*i*(f*h - e*i)^3
*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*f^5) + (3*i^2*(f*h - e*i)^2*(e + f*
x)^2*(a + b*Log[c*(e + f*x)]))/(d*f^5) + (4*i^3*(f*h - e*i)*(e + f*x)^3*(a
+ b*Log[c*(e + f*x)]))/(3*d*f^5) + (i^4*(e + f*x)^4*(a + b*Log[c*(e + f*x)]
))/(4*d*f^5) + ((f*h - e*i)^4*Log[e + f*x]*(a + b*Log[c*(e + f*x)]))/(d*f^5
)
```

Rubi [A] time = 0.506015, antiderivative size = 260, normalized size of antiderivative = 0.83, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2411, 12, 43, 2334, 2301}

$$\frac{\left(\frac{36i^2(e+fx)^2(fh-ei)^2}{f^4}+\frac{16i^3(e+fx)^3(fh-ei)}{f^4}+\frac{48i(e+fx)(fh-ei)^3}{f^4}+\frac{12(fh-ei)^4\log(e+fx)}{f^4}+\frac{3i^4(e+fx)^4}{f^4}\right)(a+b\log(c(e+fx)))}{12df}-\frac{3bi^2(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^4*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (-4*b*i*(f*h - e*i)^3*x)/(d*f^4) - (3*b*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d
*f^5) - (4*b*i^3*(f*h - e*i)*(e + f*x)^3)/(9*d*f^5) - (b*i^4*(e + f*x)^4)/(
16*d*f^5) - (b*(f*h - e*i)^4*Log[e + f*x]^2)/(2*d*f^5) + (((48*i*(f*h - e*i
)^3*(e + f*x))/f^4 + (36*i^2*(f*h - e*i)^2*(e + f*x)^2)/f^4 + (16*i^3*(f*h
- e*i)*(e + f*x)^3)/f^4 + (3*i^4*(e + f*x)^4)/f^4 + (12*(f*h - e*i)^4*Log[e
 + f*x])/f^4)*(a + b*Log[c*(e + f*x)]))/(12*d*f)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{(h+175x)^4(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-175e+fh}{f}+\frac{175x}{f}\right)^4(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-175e+fh}{f}+\frac{175x}{f}\right)^4(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\left(\frac{8400(175e-fh)^3(e+fx)}{f^4} - \frac{1102500(175e-fh)^2(e+fx)^2}{f^4} + \frac{85750000(175e-fh)(e+fx)^3}{f^4} - \frac{28136718\ldots}{\ldots}\right.}{12df}$$

$$= -\frac{\left(\frac{8400(175e-fh)^3(e+fx)}{f^4} - \frac{1102500(175e-fh)^2(e+fx)^2}{f^4} + \frac{85750000(175e-fh)(e+fx)^3}{f^4} - \frac{28136718\ldots}{\ldots}\right.}{12df}$$

$$= \frac{700b(175e-fh)^3x}{df^4} - \frac{91875b(175e-fh)^2(e+fx)^2}{2df^5} + \frac{21437500b(175e-fh)(e\ldots}{9df^5}$$

$$= \frac{700b(175e-fh)^3x}{df^4} - \frac{91875b(175e-fh)^2(e+fx)^2}{2df^5} + \frac{21437500b(175e-fh)(e\ldots}{9df^5}$$

Mathematica [A] time = 0.54832, size = 589, normalized size = 1.87

$$\frac{432a^2e^2f^2h^2i^2 - 288a^2e^3fhi^3 + 72a^2e^4i^4 - 288a^2ef^3h^3i + 72a^2f^4h^4 + 12b\log(c(e+fx))\left(12a(fh-ei)^4 + bi\left(6e^2f^2i\left(-12\ldots\right.\right.\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^4*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (72*a^2*f^4*h^4 - 288*a^2*e*f^3*h^3*i + 432*a^2*e^2*f^2*h^2*i^2 - 288*a^2*e
^3*f*h*i^3 + 72*a^2*e^4*i^4 + 576*a*b*f^4*h^3*i*x - 576*b^2*f^4*h^3*i*x - 8
64*a*b*e*f^3*h^2*i^2*x + 1296*b^2*e*f^3*h^2*i^2*x + 576*a*b*e^2*f^2*h*i^3*x
 - 1056*b^2*e^2*f^2*h*i^3*x - 144*a*b*e^3*f*i^4*x + 300*b^2*e^3*f*i^4*x + 4
32*a*b*f^4*h^2*i^2*x^2 - 216*b^2*f^4*h^2*i^2*x^2 - 288*a*b*e*f^3*h*i^3*x^2
+ 240*b^2*e*f^3*h*i^3*x^2 + 72*a*b*e^2*f^2*i^4*x^2 - 78*b^2*e^2*f^2*i^4*x^2
 + 192*a*b*f^4*h*i^3*x^3 - 64*b^2*f^4*h*i^3*x^3 - 48*a*b*e*f^3*i^4*x^3 + 28
*b^2*e*f^3*i^4*x^3 + 36*a*b*f^4*i^4*x^4 - 9*b^2*f^4*i^4*x^4 - 12*b^2*e^2*i^
2*(36*f^2*h^2 - 40*e*f*h*i + 13*e^2*i^2)*Log[e + f*x] + 12*b*(12*a*(f*h - e
*i)^4 + b*i*(-12*e^4*i^3 - 12*e^3*f*i^2*(-4*h + i*x) + 6*e^2*f^2*i*(-12*h^2
 + 8*h*i*x + i^2*x^2) + 4*e*f^3*(12*h^3 - 18*h^2*i*x - 6*h*i^2*x^2 - i^3*x^
3) + f^4*x*(48*h^3 + 36*h^2*i*x + 16*h*i^2*x^2 + 3*i^3*x^3)))*Log[c*(e + f*
```

```
x)] + 72*b^2*(f*h - e*i)^4*Log[c*(e + f*x)]^2)/(144*b*d*f^5)
```

Maple [B] time = 0.064, size = 1057, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] 7/36/f^2/d*b*i^4*x^3*e-13/24/f^3/d*b*i^4*x^2*e^2+25/12/f^4/d*b*i^4*x*e^3-1/
3/f^2/d*a*i^4*x^3*e+1/2/f^3/d*a*i^4*x^2*e^2-4/9/f/d*b*h*i^3*x^3+3/f/d*a*h^2
*i^2*x^2+4/3/f/d*a*h*i^3*x^3-3/2/f/d*b*h^2*i^2*x^2-1/16/f/d*b*i^4*x^4+1/4/f
/d*a*i^4*x^4+1/2/f/d*b*h^4*ln(c*f*x+c*e)^2+1/f/d*a*h^4*ln(c*f*x+c*e)+1/2/f^
5/d*b*e^4*i^4*ln(c*f*x+c*e)^2+4/f/d*a*h^3*i*x-1/f^4/d*a*e^3*i^4*x-4/f/d*b*h
^3*i*x+1/f^5/d*a*e^4*i^4*ln(c*f*x+c*e)+1/4/f/d*b*i^4*ln(c*f*x+c*e)*x^4-25/1
2/f^5/d*b*i^4*ln(c*f*x+c*e)*e^4+415/144/f^5/d*b*e^4*i^4-25/12/f^5/d*a*e^4*i
^4+5/3/f^2/d*b*e*h*i^3*x^2-22/3/f^3/d*b*e^2*h*i^3*x+4/f^2/d*b*h^3*i*ln(c*f*
x+c*e)*e+22/3/f^4/d*b*e^3*h*i^3*ln(c*f*x+c*e)-4/f^4/d*a*e^3*h*i^3*ln(c*f*x+
c*e)-1/3/f^2/d*b*i^4*ln(c*f*x+c*e)*x^3*e+3/f^3/d*b*e^2*h^2*i^2*ln(c*f*x+c*e
)^2-2/f^2/d*b*e*h^3*i*ln(c*f*x+c*e)^2-9/f^3/d*b*e^2*h^2*i^2*ln(c*f*x+c*e)+6
/f^3/d*a*e^2*h^2*i^2*ln(c*f*x+c*e)-4/f^2/d*a*e*h^3*i*ln(c*f*x+c*e)-2/f^4/d*
b*e^3*h*i^3*ln(c*f*x+c*e)^2+3/f/d*b*h^2*i^2*ln(c*f*x+c*e)*x^2+4/3/f/d*b*h*i
^3*ln(c*f*x+c*e)*x^3+4/f^2/d*a*e*h^3*i-9/f^3/d*a*e^2*h^2*i^2+22/3/f^4/d*a*e
^3*h*i^3+9/f^2/d*b*e*h^2*i^2*x-2/f^2/d*a*e*h*i^3*x^2+4/f^3/d*a*e^2*h*i^3*x-
6/f^2/d*a*e*h^2*i^2*x+1/2/f^3/d*b*i^4*ln(c*f*x+c*e)*x^2*e^2-1/f^4/d*b*i^4*l
n(c*f*x+c*e)*x*e^3+4/f/d*b*h^3*i*ln(c*f*x+c*e)*x-4/f^2/d*b*e*h^3*i+21/2/f^3
/d*b*e^2*h^2*i^2-85/9/f^4/d*b*e^3*h*i^3-2/f^2/d*b*e*h*i^3*ln(c*f*x+c*e)*x^2
+4/f^3/d*b*e^2*h*i^3*ln(c*f*x+c*e)*x-6/f^2/d*b*e*h^2*i^2*ln(c*f*x+c*e)*x
```

Maxima [B] time = 1.2568, size = 1022, normalized size = 3.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 4*b*h^3*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + 1/12*b*i^4*
(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*
e^3*x)/(d*f^4))*log(c*f*x + c*e) - 2/3*b*h*i^3*(6*e^3*log(f*x + e)/(d*f^4)
- (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))*log(c*f*x + c*e) + 3*b*h^2*i^2
*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x + c*e) -
1/2*b*h^4*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*
log(f*x + e)*log(c))/(d*f)) + 4*a*h^3*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))
+ 1/12*a*i^4*(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^
2*f*x^2 - 12*e^3*x)/(d*f^4)) - 2/3*a*h*i^3*(6*e^3*log(f*x + e)/(d*f^4) - (2
*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3*a*h^2*i^2*(2*e^2*log(f*x + e)/
(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + b*h^4*log(c*f*x + c*e)*log(d*f*x + d*e
)/(d*f) + a*h^4*log(d*f*x + d*e)/(d*f) + 2*(e*log(f*x + e)^2 - 2*f*x + 2*e*
log(f*x + e))*b*h^3*i/(d*f^2) - 3/2*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f
*x + 6*e^2*log(f*x + e))*b*h^2*i^2/(d*f^3) - 1/9*(4*f^3*x^3 - 15*e*f^2*x^2
- 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*b*h*i^3/(d*f^4)
 - 1/144*(9*f^4*x^4 - 28*e*f^3*x^3 + 78*e^2*f^2*x^2 + 72*e^4*log(f*x + e)^2
```

```
- 300*e^3*f*x + 300*e^4*log(f*x + e))*b*i^4/(d*f^5)
```

Fricas [A] time = 1.76316, size = 1019, normalized size = 3.23

$$\frac{9\,(4\,a-b)f^4i^4x^4+4\left(16\,(3\,a-b)f^4hi^3-(12\,a-7\,b)ef^3i^4\right)x^3+6\left(36\,(2\,a-b)f^4h^2i^2-8\,(6\,a-5\,b)ef^3hi^3+(12\,a-13\,b)e^2\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/144*(9*(4*a - b)*f^4*i^4*x^4 + 4*(16*(3*a - b)*f^4*h*i^3 - (12*a - 7*b)*e
*f^3*i^4)*x^3 + 6*(36*(2*a - b)*f^4*h^2*i^2 - 8*(6*a - 5*b)*e*f^3*h*i^3 + (
12*a - 13*b)*e^2*f^2*i^4)*x^2 + 72*(b*f^4*h^4 - 4*b*e*f^3*h^3*i + 6*b*e^2*f
^2*h^2*i^2 - 4*b*e^3*f*h*i^3 + b*e^4*i^4)*log(c*f*x + c*e)^2 + 12*(48*(a -
b)*f^4*h^3*i - 36*(2*a - 3*b)*e*f^3*h^2*i^2 + 8*(6*a - 11*b)*e^2*f^2*h*i^3
- (12*a - 25*b)*e^3*f*i^4)*x + 12*(3*b*f^4*i^4*x^4 + 12*a*f^4*h^4 - 48*(a -
 b)*e*f^3*h^3*i + 36*(2*a - 3*b)*e^2*f^2*h^2*i^2 - 8*(6*a - 11*b)*e^3*f*h*i
^3 + (12*a - 25*b)*e^4*i^4 + 4*(4*b*f^4*h*i^3 - b*e*f^3*i^4)*x^3 + 6*(6*b*f
^4*h^2*i^2 - 4*b*e*f^3*h*i^3 + b*e^2*f^2*i^4)*x^2 + 12*(4*b*f^4*h^3*i - 6*b
*e*f^3*h^2*i^2 + 4*b*e^2*f^2*h*i^3 - b*e^3*f*i^4)*x)*log(c*f*x + c*e))/(d*f
^5)
```

Sympy [B] time = 2.79228, size = 636, normalized size = 2.02

$$\frac{x^4\left(4ai^4-bi^4\right)}{16df}-\frac{x^3\left(12aei^4-48afhi^3-7bei^4+16bfhi^3\right)}{36df^2}+\frac{x^2\left(12ae^2i^4-48aefhi^3+72af^2h^2i^2-13be^2i^4+40befhi^3-\cdots\right)}{24df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**4*(4*a*i**4 - b*i**4)/(16*d*f) - x**3*(12*a*e*i**4 - 48*a*f*h*i**3 - 7*b
*e*i**4 + 16*b*f*h*i**3)/(36*d*f**2) + x**2*(12*a*e**2*i**4 - 48*a*e*f*h*i*
*3 + 72*a*f**2*h**2*i**2 - 13*b*e**2*i**4 + 40*b*e*f*h*i**3 - 36*b*f**2*h**
2*i**2)/(24*d*f**3) - x*(12*a*e**3*i**4 - 48*a*e**2*f*h*i**3 + 72*a*e*f**2*
h**2*i**2 - 48*a*f**3*h**3*i - 25*b*e**3*i**4 + 88*b*e**2*f*h*i**3 - 108*b*
e*f**2*h**2*i**2 + 48*b*f**3*h**3*i)/(12*d*f**4) + (-12*b*e**3*i**4*x + 48*
b*e**2*f*h*i**3*x + 6*b*e**2*f*i**4*x**2 - 72*b*e*f**2*h**2*i**2*x - 24*b*e
*f**2*h*i**3*x**2 - 4*b*e*f**2*i**4*x**3 + 48*b*f**3*h**3*i*x + 36*b*f**3*h
**2*i**2*x**2 + 16*b*f**3*h*i**3*x**3 + 3*b*f**3*i**4*x**4)*log(c*(e + f*x)
)/(12*d*f**4) + (b*e**4*i**4 - 4*b*e**3*f*h*i**3 + 6*b*e**2*f**2*h**2*i**2
- 4*b*e*f**3*h**3*i + b*f**4*h**4)*log(c*(e + f*x))**2/(2*d*f**5) + (12*a*e
**4*i**4 - 48*a*e**3*f*h*i**3 + 72*a*e**2*f**2*h**2*i**2 - 48*a*e*f**3*h**3
*i + 12*a*f**4*h**4 - 25*b*e**4*i**4 + 88*b*e**3*f*h*i**3 - 108*b*e**2*f**2
*h**2*i**2 + 48*b*e*f**3*h**3*i)*log(e + f*x)/(12*d*f**5)
```

Giac [B] time = 1.20372, size = 921, normalized size = 2.92

$$\frac{576\,bf^4h^3ix\log\left(cfx+ce\right)-192\,bf^4hix^3\log\left(cfx+ce\right)+72\,bf^4h^4\log\left(cfx+ce\right)^2-288\,bf^3h^3ie\log\left(cfx+ce\right)^2+576\,a\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/144*(576*b*f^4*h^3*i*x*log(c*f*x + c*e) - 192*b*f^4*h*i*x^3*log(c*f*x + c
*e) + 72*b*f^4*h^4*log(c*f*x + c*e)^2 - 288*b*f^3*h^3*i*e*log(c*f*x + c*e)^
2 + 576*a*f^4*h^3*i*x - 576*b*f^4*h^3*i*x - 192*a*f^4*h*i*x^3 + 64*b*f^4*h*
i*x^3 - 432*b*f^4*h^2*x^2*log(c*f*x + c*e) + 36*b*f^4*x^4*log(c*f*x + c*e)
+ 288*b*f^3*h*i*x^2*e*log(c*f*x + c*e) + 144*a*f^4*h^4*log(f*x + e) - 576*a
*f^3*h^3*i*e*log(f*x + e) + 576*b*f^3*h^3*i*e*log(f*x + e) - 432*a*f^4*h^2*
x^2 + 216*b*f^4*h^2*x^2 + 36*a*f^4*x^4 - 9*b*f^4*x^4 + 288*a*f^3*h*i*x^2*e
- 240*b*f^3*h*i*x^2*e + 864*b*f^3*h^2*x*e*log(c*f*x + c*e) - 48*b*f^3*x^3*e
*log(c*f*x + c*e) + 864*a*f^3*h^2*x*e - 1296*b*f^3*h^2*x*e - 48*a*f^3*x^3*e
 + 28*b*f^3*x^3*e - 576*b*f^2*h*i*x*e^2*log(c*f*x + c*e) - 432*b*f^2*h^2*e^
2*log(c*f*x + c*e)^2 - 576*a*f^2*h*i*x*e^2 + 1056*b*f^2*h*i*x*e^2 + 72*b*f^
2*x^2*e^2*log(c*f*x + c*e) + 288*b*f*h*i*e^3*log(c*f*x + c*e)^2 - 864*a*f^2
*h^2*e^2*log(f*x + e) + 1296*b*f^2*h^2*e^2*log(f*x + e) + 72*a*f^2*x^2*e^2
- 78*b*f^2*x^2*e^2 + 576*a*f*h*i*e^3*log(f*x + e) - 1056*b*f*h*i*e^3*log(f*
x + e) - 144*b*f*x*e^3*log(c*f*x + c*e) - 144*a*f*x*e^3 + 300*b*f*x*e^3 + 7
2*b*e^4*log(c*f*x + c*e)^2 + 144*a*e^4*log(f*x + e) - 300*b*e^4*log(f*x + e
))/(d*f^5)
```

3.176 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=244

$$\frac{3i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}+\frac{(fh-ei)^3\log(e+fx)(a+b\log(c(e+fx)))}{df^4}+\frac{3i(e+fx)(fh-ei)^2(a+b\log}{df^4}$$

```
[Out] (-3*b*i*(f*h - e*i)^2*x)/(d*f^3) - (3*b*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f
^4) - (b*i^3*(e + f*x)^3)/(9*d*f^4) - (b*(f*h - e*i)^3*Log[e + f*x]^2)/(2*d
*f^4) + (3*i*(f*h - e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*f^4) + (3
*i^2*(f*h - e*i)*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^4) + (i^3*(e
+ f*x)^3*(a + b*Log[c*(e + f*x)]))/(3*d*f^4) + ((f*h - e*i)^3*Log[e + f*x]*
(a + b*Log[c*(e + f*x)]))/(d*f^4)
```

Rubi [A] time = 0.383851, antiderivative size = 204, normalized size of antiderivative = 0.84, number of steps used = 8, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2411, 12, 43, 2334, 14, 2301}

$$\frac{\left(\frac{9i^2(e+fx)^2(fh-ei)}{f^3}+\frac{18i(e+fx)(fh-ei)^2}{f^3}+\frac{6(fh-ei)^3\log(e+fx)}{f^3}+\frac{2i^3(e+fx)^3}{f^3}\right)(a+b\log(c(e+fx)))}{6df}-\frac{3bi^2(e+fx)^2(fh-ei)}{4df^4}-\frac{3bix(fh}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (-3*b*i*(f*h - e*i)^2*x)/(d*f^3) - (3*b*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f
^4) - (b*i^3*(e + f*x)^3)/(9*d*f^4) - (b*(f*h - e*i)^3*Log[e + f*x]^2)/(2*d
*f^4) + (((18*i*(f*h - e*i)^2*(e + f*x))/f^3 + (9*i^2*(f*h - e*i)*(e + f*x)
^2)/f^3 + (2*i^3*(e + f*x)^3)/f^3 + (6*(f*h - e*i)^3*Log[e + f*x])/f^3)*(a
+ b*Log[c*(e + f*x)]))/(6*d*f)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
```

```
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{(h+176x)^3(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-176e+fh}{f}+\frac{176x}{f}\right)^3(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-176e+fh}{f}+\frac{176x}{f}\right)^3(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e-fh)^3\log(e+f}{f^3}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e-fh)^3\log(e+f}{f^3}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e-fh)^3\log(e+f}{f^3}\right.}{3df}$$

$$= \frac{\left(\frac{1584(176e-fh)^2(e+fx)}{f^3} - \frac{139392(176e-fh)(e+fx)^2}{f^3} + \frac{5451776(e+fx)^3}{f^3} - \frac{3(176e-fh)^3\log(e+f}{f^3}\right.}{3df}$$

$$= -\frac{528b(176e-fh)^2x}{df^3} + \frac{23232b(176e-fh)(e+fx)^2}{df^4} - \frac{5451776b(e+fx)^3}{9df^4} +$$

Mathematica [A] time = 0.303033, size = 375, normalized size = 1.54

$$\frac{54a^2e^2fhi^2 - 18a^2e^3i^3 - 54a^2ef^2h^2i + 18a^2f^3h^3 + 6b\log(c(e+fx))\left(6a(fh-ei)^3 + bi\left(6e^2fi(ix-3h) + 6e^3i^2 + 3ef^2\right(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (18*a^2*f^3*h^3 - 54*a^2*e*f^2*h^2*i + 54*a^2*e^2*f*h*i^2 - 18*a^2*e^3*i^3
+ 108*a*b*f^3*h^2*i*x - 108*b^2*f^3*h^2*i*x - 108*a*b*e*f^2*h*i^2*x + 162*b
^2*e*f^2*h*i^2*x + 36*a*b*e^2*f*i^3*x - 66*b^2*e^2*f*i^3*x + 54*a*b*f^3*h*i
^2*x^2 - 27*b^2*f^3*h*i^2*x^2 - 18*a*b*e*f^2*i^3*x^2 + 15*b^2*e*f^2*i^3*x^2
 + 12*a*b*f^3*i^3*x^3 - 4*b^2*f^3*i^3*x^3 + 6*b^2*e^2*i^2*(-9*f*h + 5*e*i)*
```

```
Log[e + f*x] + 6*b*(6*a*(f*h - e*i)^3 + b*i*(6*e^3*i^2 + 6*e^2*f*i*(-3*h +
i*x) + 3*e*f^2*(6*h^2 - 6*h*i*x - i^2*x^2) + f^3*x*(18*h^2 + 9*h*i*x + 2*i^
2*x^2)))*Log[c*(e + f*x)] + 18*b^2*(f*h - e*i)^3*Log[c*(e + f*x)]^2)/(36*b*
d*f^4)
```

Maple [B] time = 0.065, size = 685, normalized size = 2.8

$$\frac{3\,ahi^2x^2}{2\,df}-3\,\frac{bh^2ix}{df}+\frac{5\,bei^3x^2}{12\,df^2}-\frac{aei^3x^2}{2\,df^2}+\frac{bi^3\ln\left(cfx+ce\right)x^3}{3\,df}+\frac{11\,be^3i^3\ln\left(cfx+ce\right)}{6\,f^4d}-\frac{be^3i^3\left(\ln\left(cfx+ce\right)\right)^2}{2\,f^4d}-\frac{ae^3i^3\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] 3/2/f/d*a*h*i^2*x^2-3/f/d*b*h^2*i*x+5/12/f^2/d*b*e*i^3*x^2-1/2/f^2/d*a*e*i^
3*x^2+1/3/f/d*b*i^3*ln(c*f*x+c*e)*x^3+11/6/f^4/d*b*e^3*i^3*ln(c*f*x+c*e)-1/
2/f^4/d*b*e^3*i^3*ln(c*f*x+c*e)^2-1/f^4/d*a*e^3*i^3*ln(c*f*x+c*e)+3/f/d*a*h
^2*i*x+1/f^3/d*a*e^2*i^3*x-3/4/f/d*b*h*i^2*x^2-9/2/f^3/d*a*e^2*h*i^2+1/2/f/
d*b*h^3*ln(c*f*x+c*e)^2-1/9/f/d*b*i^3*x^3+1/3/f/d*a*i^3*x^3+1/f/d*a*h^3*ln(
c*f*x+c*e)-11/6/f^3/d*b*e^2*i^3*x+11/6/f^4/d*a*e^3*i^3-85/36/f^4/d*b*e^3*i^
3-3/2/f^2/d*b*e*h^2*i*ln(c*f*x+c*e)^2+1/f^3/d*b*e^2*i^3*ln(c*f*x+c*e)*x+3/2
/f^3/d*b*e^2*h*i^2*ln(c*f*x+c*e)^2+9/2/f^2/d*b*e*h*i^2*x+3/2/f/d*b*h*i^2*ln
(c*f*x+c*e)*x^2-9/2/f^3/d*b*e^2*h*i^2*ln(c*f*x+c*e)-3/f^2/d*a*e*h^2*i*ln(c*
f*x+c*e)-3/f^2/d*b*e*h^2*i+21/4/f^3/d*b*e^2*h*i^2+3/f^2/d*a*e*h^2*i+3/f/d*b
*h^2*i*ln(c*f*x+c*e)*x+3/f^2/d*b*h^2*i*ln(c*f*x+c*e)*e+3/f^3/d*a*e^2*h*i^2*
ln(c*f*x+c*e)-3/f^2/d*b*e*h*i^2*ln(c*f*x+c*e)*x-3/f^2/d*a*e*h*i^2*x-1/2/f^2
/d*b*e*i^3*ln(c*f*x+c*e)*x^2
```

Maxima [B] time = 1.17299, size = 728, normalized size = 2.98

$$3\,bh^2i\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)-\frac{1}{6}\,bi^3\left(\frac{6\,e^3\log\left(fx+e\right)}{df^4}-\frac{2\,f^2x^3-3\,efx^2+6\,e^2x}{df^3}\right)\log\left(cfx+ce\right)+\frac{3}{2}\,bhi^2\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 3*b*h^2*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - 1/6*b*i^3*(
6*e^3*log(f*x + e)/(d*f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))*log
(c*f*x + c*e) + 3/2*b*h*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(
d*f^2))*log(c*f*x + c*e) - 1/2*b*h^3*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(
d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(c))/(d*f)) + 3*a*h^2*i*(x/(d*f)
 - e*log(f*x + e)/(d*f^2)) - 1/6*a*i^3*(6*e^3*log(f*x + e)/(d*f^4) - (2*f^2
*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3/2*a*h*i^2*(2*e^2*log(f*x + e)/(d*f
^3) + (f*x^2 - 2*e*x)/(d*f^2)) + b*h^3*log(c*f*x + c*e)*log(d*f*x + d*e)/(d
*f) + a*h^3*log(d*f*x + d*e)/(d*f) + 3/2*(e*log(f*x + e)^2 - 2*f*x + 2*e*lo
g(f*x + e))*b*h^2*i/(d*f^2) - 3/4*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x
 + 6*e^2*log(f*x + e))*b*h*i^2/(d*f^3) - 1/36*(4*f^3*x^3 - 15*e*f^2*x^2 - 1
8*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*b*i^3/(d*f^4)
```

Fricas [A] time = 1.79446, size = 652, normalized size = 2.67

$$\frac{4\,(3\,a-b)f^3i^3x^3+3\left(9\,(2\,a-b)f^3hi^2-(6\,a-5\,b)ef^2i^3\right)x^2+18\left(bf^3h^3-3\,bef^2h^2i+3\,be^2fhi^2-be^3i^3\right)\log\left(cfx+ce\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/36*(4*(3*a - b)*f^3*i^3*x^3 + 3*(9*(2*a - b)*f^3*h*i^2 - (6*a - 5*b)*e*f^
2*i^3)*x^2 + 18*(b*f^3*h^3 - 3*b*e*f^2*h^2*i + 3*b*e^2*f*h*i^2 - b*e^3*i^3)
*log(c*f*x + c*e)^2 + 6*(18*(a - b)*f^3*h^2*i - 9*(2*a - 3*b)*e*f^2*h*i^2 +
 (6*a - 11*b)*e^2*f*i^3)*x + 6*(2*b*f^3*i^3*x^3 + 6*a*f^3*h^3 - 18*(a - b)*
e*f^2*h^2*i + 9*(2*a - 3*b)*e^2*f*h*i^2 - (6*a - 11*b)*e^3*i^3 + 3*(3*b*f^3
*h*i^2 - b*e*f^2*i^3)*x^2 + 6*(3*b*f^3*h^2*i - 3*b*e*f^2*h*i^2 + b*e^2*f*i^
3)*x)*log(c*f*x + c*e))/(d*f^4)
```

Sympy [A] time = 2.1331, size = 400, normalized size = 1.64

$$\frac{x^3\left(3ai^3-bi^3\right)}{9df}-\frac{x^2\left(6aei^3-18afhi^2-5bei^3+9bfhi^2\right)}{12df^2}+\frac{x\left(6ae^2i^3-18aefhi^2+18af^2h^2i-11be^2i^3+27befhi^2-18b\right.}{6df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**3*(3*a*i**3 - b*i**3)/(9*d*f) - x**2*(6*a*e*i**3 - 18*a*f*h*i**2 - 5*b*e
*i**3 + 9*b*f*h*i**2)/(12*d*f**2) + x*(6*a*e**2*i**3 - 18*a*e*f*h*i**2 + 18
*a*f**2*h**2*i - 11*b*e**2*i**3 + 27*b*e*f*h*i**2 - 18*b*f**2*h**2*i)/(6*d*
f**3) + (6*b*e**2*i**3*x - 18*b*e*f*h*i**2*x - 3*b*e*f*i**3*x**2 + 18*b*f**
2*h**2*i*x + 9*b*f**2*h*i**2*x**2 + 2*b*f**2*i**3*x**3)*log(c*(e + f*x))/(6
*d*f**3) + (-b*e**3*i**3 + 3*b*e**2*f*h*i**2 - 3*b*e*f**2*h**2*i + b*f**3*h
**3)*log(c*(e + f*x))**2/(2*d*f**4) - (6*a*e**3*i**3 - 18*a*e**2*f*h*i**2 +
 18*a*e*f**2*h**2*i - 6*a*f**3*h**3 - 11*b*e**3*i**3 + 27*b*e**2*f*h*i**2 -
 18*b*e*f**2*h**2*i)*log(e + f*x)/(6*d*f**4)
```

Giac [A] time = 1.1887, size = 597, normalized size = 2.45

$$\frac{108\,bf^3h^2ix\log\left(cfx+ce\right)-12\,bf^3ix^3\log\left(cfx+ce\right)+18\,bf^3h^3\log\left(cfx+ce\right)^2-54\,bf^2h^2ie\log\left(cfx+ce\right)^2+108\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/36*(108*b*f^3*h^2*i*x*log(c*f*x + c*e) - 12*b*f^3*i*x^3*log(c*f*x + c*e)
+ 18*b*f^3*h^3*log(c*f*x + c*e)^2 - 54*b*f^2*h^2*i*e*log(c*f*x + c*e)^2 + 1
08*a*f^3*h^2*i*x - 108*b*f^3*h^2*i*x - 12*a*f^3*i*x^3 + 4*b*f^3*i*x^3 - 54*
b*f^3*h*x^2*log(c*f*x + c*e) + 18*b*f^2*i*x^2*e*log(c*f*x + c*e) + 36*a*f^3
*h^3*log(f*x + e) - 108*a*f^2*h^2*i*e*log(f*x + e) + 108*b*f^2*h^2*i*e*log(
f*x + e) - 54*a*f^3*h*x^2 + 27*b*f^3*h*x^2 + 18*a*f^2*i*x^2*e - 15*b*f^2*i*
x^2*e + 108*b*f^2*h*x*e*log(c*f*x + c*e) + 108*a*f^2*h*x*e - 162*b*f^2*h*x*
e - 36*b*f*i*x*e^2*log(c*f*x + c*e) - 54*b*f*h*e^2*log(c*f*x + c*e)^2 - 36*
```

```
a*f*i*x*e^2 + 66*b*f*i*x*e^2 + 18*b*i*e^3*log(c*f*x + c*e)^2 - 108*a*f*h*e^
2*log(f*x + e) + 162*b*f*h*e^2*log(f*x + e) + 36*a*i*e^3*log(f*x + e) - 66*
b*i*e^3*log(f*x + e))/(d*f^4)
```

3.177 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=157

$$\frac{(fh-ei)^2\log(e+fx)(a+b\log(c(e+fx)))}{df^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+f$$

```
[Out] -(b*(4*f*h - 3*e*i + f*i*x)^2)/(4*d*f^3) - (b*(f*h - e*i)^2*Log[e + f*x]^2)
/(2*d*f^3) + (2*i*(f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*f^3) +
 (i^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^3) + ((f*h - e*i)^2*Log[
e + f*x]*(a + b*Log[c*(e + f*x)]))/(d*f^3)
```

Rubi [A] time = 0.262926, antiderivative size = 133, normalized size of antiderivative = 0.85, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2411, 12, 43, 2334, 14, 2301}

$$\frac{\left(\frac{4i(e+fx)(fh-ei)}{f^2}+\frac{2(fh-ei)^2\log(e+fx)}{f^2}+\frac{i^2(e+fx)^2}{f^2}\right)(a+b\log(c(e+fx)))}{2df}-\frac{b(-3ei+4fh+fix)^2}{4df^3}-\frac{b(fh-ei)^2\log^2(e+fx)}{2df^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] -(b*(4*f*h - 3*e*i + f*i*x)^2)/(4*d*f^3) - (b*(f*h - e*i)^2*Log[e + f*x]^2)
/(2*d*f^3) + (((4*i*(f*h - e*i)*(e + f*x))/f^2 + (i^2*(e + f*x)^2)/f^2 + (2
*(f*h - e*i)^2*Log[e + f*x])/f^2)*(a + b*Log[c*(e + f*x)]))/(2*d*f)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{(h+177x)^2(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-177e+fh}{f}+\frac{177x}{f}\right)^2(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-177e+fh}{f}+\frac{177x}{f}\right)^2(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\log(c(e+fx)))}{2df} -$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\log(c(e+fx)))}{2df} -$$

$$= -\frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+fx)}{f^2}\right)(a+b\log(c(e+fx)))}{2df} -$$

$$= -\frac{b(531e-4fh-177fx)^2}{4df^3} - \frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\frac{31329(e+fx)^2}{f^2}-\frac{2(177e-fh)^2\log(e+f}{f^2}\right.}{2df}$$

$$= -\frac{b(531e-4fh-177fx)^2}{4df^3} - \frac{b(177e-fh)^2\log^2(e+fx)}{2df^3} - \frac{\left(\frac{708(177e-fh)(e+fx)}{f^2}-\right.}{}$$

Mathematica [A] time = 0.146495, size = 214, normalized size = 1.36

$$\frac{2a^2e^2i^2-4a^2efhi+2a^2f^2h^2+2b\log(c(e+fx))\left(2a(fh-ei)^2+bi\left(-2e^2i+ef(4h-2ix)+f^2x(4h+ix)\right)\right)-4abefi^2x+8}{4bdf^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (2*a^2*f^2*h^2 - 4*a^2*e*f*h*i + 2*a^2*e^2*i^2 + 8*a*b*f^2*h*i*x - 8*b^2*f^
2*h*i*x - 4*a*b*e*f*i^2*x + 6*b^2*e*f*i^2*x + 2*a*b*f^2*i^2*x^2 - b^2*f^2*i
^2*x^2 - 2*b^2*e^2*i^2*Log[e + f*x] + 2*b*(2*a*(f*h - e*i)^2 + b*i*(-2*e^2*
i + e*f*(4*h - 2*i*x) + f^2*x*(4*h + i*x)))*Log[c*(e + f*x)] + 2*b^2*(f*h -
 e*i)^2*Log[c*(e + f*x)]^2)/(4*b*d*f^3)
```

Maple [B] time = 0.062, size = 387, normalized size = 2.5

$$2\,\frac{aehi}{df^2}-\frac{aei^2x}{df^2}+2\,\frac{bhi\ln(cfx+ce)\,e}{df^2}-\frac{bei^2\ln(cfx+ce)\,x}{df^2}-2\,\frac{aehi\ln(cfx+ce)}{df^2}-\frac{behi\left(\ln(cfx+ce)\right)^2}{df^2}-2\,\frac{behi}{df^2}+\frac{ah^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] 2/f^2/d*a*e*h*i-1/f^2/d*a*e*i^2*x+2/f^2/d*b*h*i*ln(c*f*x+c*e)*e-1/f^2/d*b*e
*i^2*ln(c*f*x+c*e)*x-2/f^2/d*a*e*h*i*ln(c*f*x+c*e)-1/f^2/d*b*e*h*i*ln(c*f*x
+c*e)^2-2/f^2/d*b*e*h*i+1/f/d*a*h^2*ln(c*f*x+c*e)+1/2/f/d*b*h^2*ln(c*f*x+c*
e)^2+1/2/f/d*b*i^2*ln(c*f*x+c*e)*x^2-1/4/f/d*b*i^2*x^2+1/2/f/d*a*i^2*x^2+1/
f^3/d*a*e^2*i^2*ln(c*f*x+c*e)+1/2/f^3/d*b*e^2*i^2*ln(c*f*x+c*e)^2+7/4/f^3/d
*b*e^2*i^2-3/2/f^3/d*a*e^2*i^2+3/2/f^2/d*b*e*i^2*x-3/2/f^3/d*b*e^2*i^2*ln(c
*f*x+c*e)-2/f/d*b*h*i*x+2/f/d*b*h*i*ln(c*f*x+c*e)*x+2/f/d*a*h*i*x
```

Maxima [B] time = 1.22592, size = 474, normalized size = 3.02

$$2\,bhi\left(\frac{x}{df} - \frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right) + \frac{1}{2}\,bi^2\left(\frac{2\,e^2\log\left(fx+e\right)}{df^3} + \frac{fx^2-2\,ex}{df^2}\right)\log\left(cfx+ce\right) - \frac{1}{2}\,bh^2\left(\frac{2\,\log\left(cfx+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 2*b*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + 1/2*b*i^2*(2*
e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x + c*e) - 1/2*
b*h^2*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(
f*x + e)*log(c))/(d*f)) + 2*a*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + 1/2*
a*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + b*h^2*log(c*
f*x + c*e)*log(d*f*x + d*e)/(d*f) + a*h^2*log(d*f*x + d*e)/(d*f) + (e*log(f
*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*b*h*i/(d*f^2) - 1/4*(f^2*x^2 + 2*e^2*
log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e))*b*i^2/(d*f^3)
```

Fricas [A] time = 1.69835, size = 366, normalized size = 2.33

$$\frac{(2\,a-b)f^2i^2x^2 + 2\left(bf^2h^2 - 2\,befhi + be^2i^2\right)\log\left(cfx+ce\right)^2 + 2\left(4\,(a-b)f^2hi - (2\,a-3\,b)efi^2\right)x + 2\left(bf^2i^2x^2 + 2\,af^2\right.}{4\,df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/4*((2*a - b)*f^2*i^2*x^2 + 2*(b*f^2*h^2 - 2*b*e*f*h*i + b*e^2*i^2)*log(c*
f*x + c*e)^2 + 2*(4*(a - b)*f^2*h*i - (2*a - 3*b)*e*f*i^2)*x + 2*(b*f^2*i^2
*x^2 + 2*a*f^2*h^2 - 4*(a - b)*e*f*h*i + (2*a - 3*b)*e^2*i^2 + 2*(2*b*f^2*h
*i - b*e*f*i^2)*x)*log(c*f*x + c*e))/(d*f^3)
```

Sympy [A] time = 1.41912, size = 216, normalized size = 1.38

$$\frac{x^2\left(2ai^2-bi^2\right)}{4df} - \frac{x\left(2aei^2-4afhi-3bei^2+4bfhi\right)}{2df^2} + \frac{\left(-2bei^2x+4bfhix+bfi^2x^2\right)\log\left(c\left(e+fx\right)\right)}{2df^2} + \frac{\left(be^2i^2-2befhi\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] x**2*(2*a*i**2 - b*i**2)/(4*d*f) - x*(2*a*e*i**2 - 4*a*f*h*i - 3*b*e*i**2 +
 4*b*f*h*i)/(2*d*f**2) + (-2*b*e*i**2*x + 4*b*f*h*i*x + b*f*i**2*x**2)*log(
c*(e + f*x))/(2*d*f**2) + (b*e**2*i**2 - 2*b*e*f*h*i + b*f**2*h**2)*log(c*(
e + f*x))**2/(2*d*f**3) + (2*a*e**2*i**2 - 4*a*e*f*h*i + 2*a*f**2*h**2 - 3*
b*e**2*i**2 + 4*b*e*f*h*i)*log(e + f*x)/(2*d*f**3)
```

Giac [A] time = 1.21063, size = 325, normalized size = 2.07

$$\frac{8\,bf^2hix\log\left(cfx+ce\right)+2\,bf^2h^2\log\left(cfx+ce\right)^2-4\,bfhie\log\left(cfx+ce\right)^2+8\,af^2hix-8\,bf^2hix-2\,bf^2x^2\log\left(cfx+ce\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/4*(8*b*f^2*h*i*x*log(c*f*x + c*e) + 2*b*f^2*h^2*log(c*f*x + c*e)^2 - 4*b*
f*h*i*e*log(c*f*x + c*e)^2 + 8*a*f^2*h*i*x - 8*b*f^2*h*i*x - 2*b*f^2*x^2*lo
g(c*f*x + c*e) + 4*a*f^2*h^2*log(f*x + e) - 8*a*f*h*i*e*log(f*x + e) + 8*b*
f*h*i*e*log(f*x + e) - 2*a*f^2*x^2 + b*f^2*x^2 + 4*b*f*x*e*log(c*f*x + c*e)
 + 4*a*f*x*e - 6*b*f*x*e - 2*b*e^2*log(c*f*x + c*e)^2 - 4*a*e^2*log(f*x + e
) + 6*b*e^2*log(f*x + e))/(d*f^3)
```

3.178 $\int \frac{(h+ix)(a+b\log(c(e+fx)))}{de+dfx}\,dx$

Optimal. Leaf size=79

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{2bdf^2}+\frac{aix}{df}+\frac{bi(e+fx)\log(c(e+fx))}{df^2}-\frac{bix}{df}$$

```
[Out] (a*i*x)/(d*f) - (b*i*x)/(d*f) + (b*i*(e + f*x)*Log[c*(e + f*x)])/(d*f^2) +
((f*h - e*i)*(a + b*Log[c*(e + f*x)])^2)/(2*b*d*f^2)
```

Rubi [A] time = 0.129091, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2411, 12, 2346, 2301, 2295}

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{2bdf^2}+\frac{aix}{df}+\frac{bi(e+fx)\log(c(e+fx))}{df^2}-\frac{bix}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (a*i*x)/(d*f) - (b*i*x)/(d*f) + (b*i*(e + f*x)*Log[c*(e + f*x)])/(d*f^2) +
((f*h - e*i)*(a + b*Log[c*(e + f*x)])^2)/(2*b*d*f^2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\int \frac{(h+178x)(a+b\log(c(e+fx)))}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-178e+fh}{f}+\frac{178x}{f}\right)(a+b\log(cx))}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-178e+fh}{f}+\frac{178x}{f}\right)(a+b\log(cx))}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{178\,\text{Subst}(\int (a+b\log(cx))\,dx, x, e+fx)}{df^2} - \frac{(178e-fh)\,\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx,\right.}{df^2}$$

$$= \frac{178ax}{df} - \frac{(178e-fh)(a+b\log(c(e+fx)))^2}{2bdf^2} + \frac{(178b)\,\text{Subst}(\int \log(cx)\,dx, x, e+}{df^2}$$

$$= \frac{178ax}{df} - \frac{178bx}{df} + \frac{178b(e+fx)\log(c(e+fx))}{df^2} - \frac{(178e-fh)(a+b\log(c(e+fx}{2bdf^2}$$

Mathematica [A] time = 0.0523261, size = 66, normalized size = 0.84

$$\frac{\frac{(fh-ei)(a+b\log(c(e+fx)))^2}{b} + 2afix + 2bi(e+fx)\log(c(e+fx)) - 2bfix}{2df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)]))/(d*e + d*f*x),x]
```

```
[Out] (2*a*f*i*x - 2*b*f*i*x + 2*b*i*(e + f*x)*Log[c*(e + f*x)] + ((f*h - e*i)*(a
 + b*Log[c*(e + f*x)])^2)/b)/(2*d*f^2)
```

Maple [B] time = 0.06, size = 163, normalized size = 2.1

$$-\frac{aei\ln\left(cfx+ce\right)}{df^2} + \frac{ah\ln\left(cfx+ce\right)}{df} + \frac{aix}{df} + \frac{aei}{df^2} - \frac{bei\left(\ln\left(cfx+ce\right)\right)^2}{2df^2} + \frac{bh\left(\ln\left(cfx+ce\right)\right)^2}{2df} + \frac{bi\ln\left(cfx+ce\right)x}{df} + \frac{bi}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] -1/f^2/d*a*e*i*ln(c*f*x+c*e)+1/f/d*a*h*ln(c*f*x+c*e)+a*i*x/d/f+1/f^2/d*a*e*
i-1/2/f^2/d*b*e*i*ln(c*f*x+c*e)^2+1/2/f/d*b*h*ln(c*f*x+c*e)^2+1/f/d*b*i*ln(
c*f*x+c*e)*x+1/f^2/d*b*i*ln(c*f*x+c*e)*e-b*i*x/d/f-1/f^2/d*b*e*i
```

Maxima [B] time = 1.1177, size = 271, normalized size = 3.43

$$bi\left(\frac{x}{df} - \frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right) - \frac{1}{2}bh\left(\frac{2\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df} - \frac{\log\left(fx+e\right)^2 + 2\log\left(fx+e\right)\log\left(c\right)}{df}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] b*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - 1/2*b*h*(2*log(c*
f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(c)
)/(d*f)) + a*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + b*h*log(c*f*x + c*e)*lo
g(d*f*x + d*e)/(d*f) + a*h*log(d*f*x + d*e)/(d*f) + 1/2*(e*log(f*x + e)^2 -
 2*f*x + 2*e*log(f*x + e))*b*i/(d*f^2)
```

Fricas [A] time = 1.62039, size = 163, normalized size = 2.06

$$\frac{2\,(a-b)fix + \left(bfh - bei\right)\log\left(cfx + ce\right)^2 + 2\left(bfix + afh - (a-b)ei\right)\log\left(cfx + ce\right)}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(a - b)*f*i*x + (b*f*h - b*e*i)*log(c*f*x + c*e)^2 + 2*(b*f*i*x + a*
f*h - (a - b)*e*i)*log(c*f*x + c*e))/(d*f^2)
```

Sympy [A] time = 0.89032, size = 82, normalized size = 1.04

$$\frac{bix\log\left(c\left(e+fx\right)\right)}{df} + \frac{x\,(ai-bi)}{df} + \frac{\left(-bei+bfh\right)\log\left(c\left(e+fx\right)\right)^2}{2df^2} - \frac{\left(aei-afh-bei\right)\log\left(e+fx\right)}{df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] b*i*x*log(c*(e + f*x))/(d*f) + x*(a*i - b*i)/(d*f) + (-b*e*i + b*f*h)*log(c
*(e + f*x))**2/(2*d*f**2) - (a*e*i - a*f*h - b*e*i)*log(e + f*x)/(d*f**2)
```

Giac [A] time = 1.17167, size = 147, normalized size = 1.86

$$\frac{2\,bfix\log\left(cfx+ce\right) + bfh\log\left(cfx+ce\right)^2 - bie\log\left(cfx+ce\right)^2 + 2\,afix - 2\,bfix + 2\,afh\log\left(fx+e\right) - 2\,aie\log\left(fx\right.}{2\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/2*(2*b*f*i*x*log(c*f*x + c*e) + b*f*h*log(c*f*x + c*e)^2 - b*i*e*log(c*f*
x + c*e)^2 + 2*a*f*i*x - 2*b*f*i*x + 2*a*f*h*log(f*x + e) - 2*a*i*e*log(f*x
 + e) + 2*b*i*e*log(f*x + e))/(d*f^2)
```

3.179 $\int \frac{a+b\log(c(e+fx))}{de+dfx}\,dx$

Optimal. Leaf size=27

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)
```

Rubi [A] time = 0.0343237, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {2390, 12, 2301}

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\log(c(e+fx))}{de+dfx}\,dx &= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx}\,dx, x, e+fx\right)}{f}\\ &= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx, x, e+fx\right)}{df}\\ &= \frac{(a+b\log(c(e+fx)))^2}{2bdf}\end{aligned}$$

Mathematica [A] time = 0.0036606, size = 27, normalized size = 1.

$$\frac{(a+b\log(c(e+fx)))^2}{2bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*f)
```

Maple [A] time = 0.062, size = 39, normalized size = 1.4

$$\frac{a\ln\left(cfx+ce\right)}{df}+\frac{b\left(\ln\left(cfx+ce\right)\right)^{2}}{2df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] 1/f/d*a*ln(c*f*x+c*e)+1/2/f/d*b*ln(c*f*x+c*e)^2
```

Maxima [B] time = 1.13009, size = 136, normalized size = 5.04

$$-\frac{1}{2}b\left(\frac{2\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^{2}+2\log\left(fx+e\right)\log\left(c\right)}{df}\right)+\frac{b\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}+\frac{a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -1/2*b*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log
(f*x + e)*log(c))/(d*f)) + b*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a*lo
g(d*f*x + d*e)/(d*f)
```

Fricas [A] time = 1.65599, size = 77, normalized size = 2.85

$$\frac{b\log\left(cfx+ce\right)^{2}+2\,a\log\left(cfx+ce\right)}{2\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/2*(b*log(c*f*x + c*e)^2 + 2*a*log(c*f*x + c*e))/(d*f)
```

Sympy [A] time = 0.366937, size = 31, normalized size = 1.15

$$\frac{a\log\left(de+dfx\right)}{df}+\frac{b\log\left(c\left(e+fx\right)\right)^{2}}{2df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e),x)
```

```
[Out] a*log(d*e + d*f*x)/(d*f) + b*log(c*(e + f*x))**2/(2*d*f)
```

Giac [A] time = 1.19508, size = 46, normalized size = 1.7

$$\frac{b\log\left(\left(fx+e\right)c\right)^{2}+2\,a\log\left(\left(fx+e\right)c\right)}{2\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/2*(b*log((f*x + e)*c)^2 + 2*a*log((f*x + e)*c))/(d*f)
```

3.180 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=87

$$\frac{b\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}-\frac{\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)}$$

```
[Out] -(((a + b*Log[c*(e + f*x)])*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(d*(f*h - e
*i))) + (b*PolyLog[2, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i))
```

Rubi [A] time = 0.234306, antiderivative size = 116, normalized size of antiderivative = 1.33, number of steps used = 6, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2411, 12, 2344, 2301, 2317, 2391}

$$-\frac{b\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)}+\frac{(a+b\log(c(e+fx)))^2}{2bd(fh-ei)}-\frac{\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^2/(2*b*d*(f*h - e*i)) - ((a + b*Log[c*(e + f*x)])*
Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)) - (b*PolyLog[2, -((i*(e + f
*x))/(f*h - e*i))])/(d*(f*h - e*i))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
```

```
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+180x)(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-180e+fh}{f}+\frac{180x}{f}\right)}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-180e+fh}{f}+\frac{180x}{f}\right)}\,dx, x, e+fx\right)}{df}$$
$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x}\,dx, x, e+fx\right)}{d(180e-fh)} + \frac{180\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\frac{-180e+fh}{f}+\frac{180x}{f}}\,dx, x, e+fx\right)}{df(180e-fh)}$$
$$= \frac{\log\left(-\frac{f(h+180x)}{180e-fh}\right)(a+b\log(c(e+fx)))}{d(180e-fh)} - \frac{(a+b\log(c(e+fx)))^2}{2bd(180e-fh)} - \frac{b\,\text{Subst}\left(\int \frac{\log\left(1+\frac{180x}{-180e+fh}\right)}{x}\ldots\right.}{d(180e-f\ldots}$$
$$= \frac{\log\left(-\frac{f(h+180x)}{180e-fh}\right)(a+b\log(c(e+fx)))}{d(180e-fh)} - \frac{(a+b\log(c(e+fx)))^2}{2bd(180e-fh)} + \frac{b\text{Li}_2\left(\frac{180(e+fx)}{180e-fh}\right)}{d(180e-fh)}$$

Mathematica [A] time = 0.0646556, size = 91, normalized size = 1.05

$$\frac{(a+b\log(c(e+fx)))\left(a+b\log(c(e+fx))-2b\log\left(\frac{f(h+ix)}{fh-ei}\right)\right)-2b^2\text{PolyLog}\left(2,\frac{i(e+fx)}{ei-fh}\right)}{2bd(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(e + f*x)])*(a + b*Log[c*(e + f*x)] - 2*b*Log[(f*(h + i*x))/(
f*h - e*i)]) - 2*b^2*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)])/(2*b*d*(f*h
- e*i))
```

Maple [B] time = 0.489, size = 197, normalized size = 2.3

$$-\frac{a\ln\left(cfx+ce\right)}{d\left(ei-fh\right)} + \frac{a\ln\left(-cei+hcf+\left(cfx+ce\right)i\right)}{d\left(ei-fh\right)} - \frac{b\left(\ln\left(cfx+ce\right)\right)^2}{2\,d\left(ei-fh\right)} + \frac{b}{d\left(ei-fh\right)}\text{dilog}\left(\frac{-cei+hcf+\left(cfx+ce\right)i}{-cei+hcf}\right)+\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] -1/d*a/(e*i-f*h)*ln(c*f*x+c*e)+1/d*a/(e*i-f*h)*ln(-c*e*i+h*c*f+(c*f*x+c*e)*
i)-1/2/d*b/(e*i-f*h)*ln(c*f*x+c*e)^2+1/d*b/(e*i-f*h)*dilog((-c*e*i+h*c*f+(c
```

```
*f*x+c*e)*i)/(-c*e*i+c*f*h))+1/d*b/(e*i-f*h)*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f
+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{\log\left(fx+e\right)}{dfh-dei}-\frac{\log\left(ix+h\right)}{dfh-dei}\right)+b\int\frac{\log\left(fx+e\right)+\log\left(c\right)}{dfix^2+deh+\left(fh+ei\right)dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a*(log(f*x + e)/(d*f*h - d*e*i) - log(i*x + h)/(d*f*h - d*e*i)) + b*integra
te((log(f*x + e) + log(c))/(d*f*i*x^2 + d*e*h + (f*h + e*i)*d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left(cfx+ce\right)+a}{dfix^2+deh+\left(dfh+dei\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*i*x^2 + d*e*h + (d*f*h + d*e*i)*x),
x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(fx+e\right)c\right)+a}{\left(dfx+de\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(i*x + h)), x)
```

3.181 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=151

$$\frac{bf\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}-\frac{f\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^2}+\frac{bf\log(h+ix)}{d(fh-ei)^2}$$

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^2*(h + i*x))) + (b*
f*Log[h + i*x])/(d*(f*h - e*i)^2) - (f*(a + b*Log[c*(e + f*x)])*Log[1 + (f*
h - e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^2) + (b*f*PolyLog[2, -((f*h - e*i)/
(i*(e + f*x)))])/(d*(f*h - e*i)^2)
```

Rubi [A] time = 0.364054, antiderivative size = 181, normalized size of antiderivative = 1.2, number of steps used = 9, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2411, 12, 2347, 2344, 2301, 2317, 2391, 2314, 31}

$$-\frac{bf\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{f(a+b\log(c(e+fx)))^2}{2bd(fh-ei)^2}-\frac{f\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}-\frac{i(e+fx)(a+b\log(c(e+f}{d(h+ix)(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^2*(h + i*x))) + (f*
(a + b*Log[c*(e + f*x)])^2)/(2*b*d*(f*h - e*i)^2) + (b*f*Log[h + i*x])/(d*(
f*h - e*i)^2) - (f*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])
/(d*(f*h - e*i)^2) - (b*f*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h
 - e*i)^2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
```

```
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+181x)^2(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx,x,e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)}\,dx,x,e+fx\right)}{d(181e-fh)} + \frac{181\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-181e+fh}{f}+\frac{181x}{f}\right)^2}\,dx,x,e+fx\right)}{df(181e-fh)}$$

$$= -\frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{181\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\frac{-181e+fh}{f}+\frac{181x}{f}}\,dx,x,e+fx\right)}{d(181e-fh)^2} + \frac{(181b}{}$$

$$= \frac{bf\log(h+181x)}{d(181e-fh)^2} - \frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{f\log\left(-\frac{f(h+181x)}{181e-fh}\right)(a+b\log(c(}{d(181e-fh)^2}$$

$$= \frac{bf\log(h+181x)}{d(181e-fh)^2} - \frac{181(e+fx)(a+b\log(c(e+fx)))}{d(181e-fh)^2(h+181x)} - \frac{f\log\left(-\frac{f(h+181x)}{181e-fh}\right)(a+b\log(c(}{d(181e-fh)^2}$$

Mathematica [A] time = 0.154471, size = 141, normalized size = 0.93

$$\frac{-2bf\text{PolyLog}\left(2,\frac{i(e+fx)}{ei-fh}\right)-2f\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))+\frac{2(fh-ei)(a+b\log(c(e+fx)))}{h+ix}+\frac{f(a+b\log(c(e+fx)))^2}{b}-2bf(\log(e}{2d(fh-ei)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] ((2*(f*h - e*i)*(a + b*Log[c*(e + f*x)]))/(h + i*x) + (f*(a + b*Log[c*(e +
f*x)])^2)/b - 2*b*f*(Log[e + f*x] - Log[h + i*x]) - 2*f*(a + b*Log[c*(e + f
*x)])*Log[(f*(h + i*x))/(f*h - e*i)] - 2*b*f*PolyLog[2, (i*(e + f*x))/(-(f*
h) + e*i)])/(2*d*(f*h - e*i)^2)
```

Maple [B] time = 0.563, size = 355, normalized size = 2.4

$$\frac{af\ln\left(cfx+ce\right)}{d\left(ei-fh\right)^2}-\frac{acf}{d\left(ei-fh\right)\left(cfix+hcf\right)}-\frac{af\ln\left(-cei+hcf+\left(cfx+ce\right)i\right)}{d\left(ei-fh\right)^2}+\frac{bf\left(\ln\left(cfx+ce\right)\right)^2}{2d\left(ei-fh\right)^2}-\frac{bf}{d\left(ei-fh\right)^2}\text{dilo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] f/d*a/(e*i-f*h)^2*ln(c*f*x+c*e)-c*f/d*a/(e*i-f*h)/(c*f*i*x+c*f*h)-f/d*a/(e*
i-f*h)^2*ln(-c*e*i+h*c*f+(c*f*x+c*e)*i)+1/2*f/d*b/(e*i-f*h)^2*ln(c*f*x+c*e)
^2-f/d*b/(e*i-f*h)^2*dilog((-c*e*i+h*c*f+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))-f/d
*b/(e*i-f*h)^2*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f+(c*f*x+c*e)*i)/(-c*e*i+c*f*h)
)+f/d*b/(e*i-f*h)^2*ln(-c*e*i+h*c*f+(c*f*x+c*e)*i)-c*f^2/d*b/(e*i-f*h)^2*i*
ln(c*f*x+c*e)/(c*f*i*x+c*f*h)*x-c*f/d*b/(e*i-f*h)^2*i*ln(c*f*x+c*e)/(c*f*i*
x+c*f*h)*e
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{f\log\left(fx+e\right)}{df^2h^2-2\,defhi+de^2i^2}-\frac{f\log\left(ix+h\right)}{df^2h^2-2\,defhi+de^2i^2}+\frac{1}{dfh^2-dehi+\left(dfhi-dei^2\right)x}\right)+b\int\frac{\log\left(fx+e\right)}{dfi^2x^3+deh^2+\left(2\,fhi+ei\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a*(f*log(f*x + e)/(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) - f*log(i*x + h)/(d
*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) + 1/(d*f*h^2 - d*e*h*i + (d*f*h*i - d*e
*i^2)*x)) + b*integrate((log(f*x + e) + log(c))/(d*f*i^2*x^3 + d*e*h^2 + (2
*f*h*i + e*i^2)*d*x^2 + (f*h^2 + 2*e*h*i)*d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(cfx+ce\right)+a}{dfi^2x^3+deh^2+\left(2\,dfhi+dei^2\right)x^2+\left(dfh^2+2\,dehi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*i^2*x^3 + d*e*h^2 + (2*d*f*h*i + d*e
*i^2)*x^2 + (d*f*h^2 + 2*d*e*h*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(fx+e\right)c\right)+a}{\left(dfx+de\right)\left(ix+h\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(i*x + h)^2), x)
```

3.182 $\int \frac{a+b\log(c(e+fx))}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=250

$$\frac{bf^2\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^3}-\frac{f^2\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{fi(e+fx)(a+b\log(c(e+fx)))}{d(h+ix)(fh-ei)^3}+\frac{a+b\log(c(e\cdots}{2d(h+ix)^2(f\cdots}$$

```
[Out] -(b*f)/(2*d*(f*h - e*i)^2*(h + i*x)) - (b*f^2*Log[e + f*x])/(2*d*(f*h - e*i
)^3) + (a + b*Log[c*(e + f*x)])/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f
*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) + (3*b*f^2*Log[h
+ i*x])/(2*d*(f*h - e*i)^3) - (f^2*(a + b*Log[c*(e + f*x)])*Log[1 + (f*h -
e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^3) + (b*f^2*PolyLog[2, -((f*h - e*i)/(i
*(e + f*x)))])/(d*(f*h - e*i)^3)
```

Rubi [A] time = 0.571978, antiderivative size = 282, normalized size of antiderivative = 1.13, number of steps used = 13, number of rules used = 11, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.367, Rules used = {2411, 12, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$-\frac{bf^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{f^2(a+b\log(c(e+fx)))^2}{2bd(fh-ei)^3}-\frac{f^2\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{fi(e+fx)(a+b\log(c(\cdots}{d(h+ix)(fh-e\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] -(b*f)/(2*d*(f*h - e*i)^2*(h + i*x)) - (b*f^2*Log[e + f*x])/(2*d*(f*h - e*i
)^3) + (a + b*Log[c*(e + f*x)])/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f
*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) + (f^2*(a + b*Log
[c*(e + f*x)])^2)/(2*b*d*(f*h - e*i)^3) + (3*b*f^2*Log[h + i*x])/(2*d*(f*h
- e*i)^3) - (f^2*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(
d*(f*h - e*i)^3) - (b*f^2*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h
 - e*i)^3)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\int \frac{a+b\log(c(e+fx))}{(h+182x)^3(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{dx\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{a+b\log(cx)}{x\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^2}dx, x, e+fx\right)}{d(182e-fh)} + \frac{182\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^3}dx, x, e+fx\right)}{df(182e-fh)}$$

$$= -\frac{a+b\log(c(e+fx))}{2d(182e-fh)(h+182x)^2} - \frac{182\,\text{Subst}\left(\int \frac{a+b\log(cx)}{\left(\frac{-182e+fh}{f}+\frac{182x}{f}\right)^2}dx, x, e+fx\right)}{d(182e-fh)^2} + \frac{f\,\text{Subst}\left(\int \frac{}{x}\right.}{}$$

$$= -\frac{a+b\log(c(e+fx))}{2d(182e-fh)(h+182x)^2} + \frac{182f(e+fx)(a+b\log(c(e+fx)))}{d(182e-fh)^3(h+182x)} + \frac{(182f)\,\text{Subst}\left(\int \frac{a+}{\frac{-182}{f}}\right.}{d(182e}$$

$$= -\frac{bf}{2d(182e-fh)^2(h+182x)} - \frac{3bf^2\log(h+182x)}{2d(182e-fh)^3} + \frac{bf^2\log(e+fx)}{2d(182e-fh)^3} - \frac{a+b\log(c(e+}{2d(182e-fh)(h+}$$

$$= -\frac{bf}{2d(182e-fh)^2(h+182x)} - \frac{3bf^2\log(h+182x)}{2d(182e-fh)^3} + \frac{bf^2\log(e+fx)}{2d(182e-fh)^3} - \frac{a+b\log(c(e+}{2d(182e-fh)(h+}$$

Mathematica [A] time = 0.228339, size = 226, normalized size = 0.9

$$\frac{-2bf^2\text{PolyLog}\left(2,\frac{i(e+fx)}{ei-fh}\right) - 2f^2\log\left(\frac{f(h+ix)}{fh-ei}\right)(a+b\log(c(e+fx))) + \frac{f^2(a+b\log(c(e+fx)))^2}{b} + \frac{2f(fh-ei)(a+b\log(c(e+fx)))}{h+ix} + \frac{(fh-ei)}{}}{2d(fh-ei)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (((f*h - e*i)^2*(a + b*Log[c*(e + f*x)]))/(h + i*x)^2 + (2*f*(f*h - e*i)*(a
 + b*Log[c*(e + f*x)]))/(h + i*x) + (f^2*(a + b*Log[c*(e + f*x)])^2)/b - 2*
b*f^2*(Log[e + f*x] - Log[h + i*x]) - (b*f*(f*h - e*i + f*(h + i*x)*Log[e +
 f*x] - f*(h + i*x)*Log[h + i*x]))/(h + i*x) - 2*f^2*(a + b*Log[c*(e + f*x)
])*Log[(f*(h + i*x))/(f*h - e*i)] - 2*b*f^2*PolyLog[2, (i*(e + f*x))/(-(f*h
) + e*i)])/(2*d*(f*h - e*i)^3)
```

Maple [B] time = 0.476, size = 656, normalized size = 2.6

$$-\frac{af^2\ln\left(cfx+ce\right)}{d\left(ei-fh\right)^3} + \frac{af^2\ln\left(-cei+hcf+\left(cfx+ce\right)i\right)}{d\left(ei-fh\right)^3} - \frac{f^2c^2a}{2\,d\left(ei-fh\right)\left(cfix+hcf\right)^2} + \frac{cf^2a}{d\left(ei-fh\right)^2\left(cfix+hcf\right)} - \frac{bf^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] -f^2/d*a/(e*i-f*h)^3*ln(c*f*x+c*e)+f^2/d*a/(e*i-f*h)^3*ln(-c*e*i+h*c*f+(c*f
*x+c*e)*i)-1/2*c^2*f^2/d*a/(e*i-f*h)/(c*f*i*x+c*f*h)^2+c*f^2/d*a/(e*i-f*h)^
2/(c*f*i*x+c*f*h)-1/2*f^2/d*b/(e*i-f*h)^3*ln(c*f*x+c*e)^2-3/2*f^2/d*b/(e*i-
f*h)^3*ln(-c*e*i+h*c*f+(c*f*x+c*e)*i)-1/2*c*f^2/d*b/(e*i-f*h)^3*i/(c*f*i*x+
c*f*h)*e+1/2*c*f^3/d*b/(e*i-f*h)^3/(c*f*i*x+c*f*h)*h-1/2*c^2*f^2/d*b/(e*i-f
*h)^3*i^2*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)^2*e^2+c^2*f^4/d*b/(e*i-f*h)^3*i*ln(
c*f*x+c*e)/(c*f*i*x+c*f*h)^2*h*x+c^2*f^3/d*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)/(c
*f*i*x+c*f*h)^2*h*e+1/2*c^2*f^4/d*b/(e*i-f*h)^3*i^2*ln(c*f*x+c*e)/(c*f*i*x+
c*f*h)^2*x^2+f^2/d*b/(e*i-f*h)^3*dilog((-c*e*i+h*c*f+(c*f*x+c*e)*i)/(-c*e*i
+c*f*h))+f^2/d*b/(e*i-f*h)^3*ln(c*f*x+c*e)*ln((-c*e*i+h*c*f+(c*f*x+c*e)*i)/
(-c*e*i+c*f*h))+c*f^3/d*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)*x+c*f
^2/d*b/(e*i-f*h)^3*i*ln(c*f*x+c*e)/(c*f*i*x+c*f*h)*e
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(\frac{2\,f^2\log\left(fx+e\right)}{df^3h^3-3\,def^2h^2i+3\,de^2fhi^2-de^3i^3}-\frac{2\,f^2\log\left(ix+h\right)}{df^3h^3-3\,def^2h^2i+3\,de^2fhi^2-de^3i^3}+\frac{}{df^2h^4-2\,defh^3i+de^2h^2i^2+\left(df\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*f^2*log(f*x + e)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^2 - d*
e^3*i^3) - 2*f^2*log(i*x + h)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^
2 - d*e^3*i^3) + (2*f*i*x + 3*f*h - e*i)/(d*f^2*h^4 - 2*d*e*f*h^3*i + d*e^2
*h^2*i^2 + (d*f^2*h^2*i^2 - 2*d*e*f*h*i^3 + d*e^2*i^4)*x^2 + 2*(d*f^2*h^3*i
 - 2*d*e*f*h^2*i^2 + d*e^2*h*i^3)*x))*a + b*integrate((log(f*x + e) + log(c
))/(d*f*i^3*x^4 + d*e*h^3 + (3*f*h*i^2 + e*i^3)*d*x^3 + 3*(f*h^2*i + e*h*i^
2)*d*x^2 + (f*h^3 + 3*e*h^2*i)*d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(cfx+ce\right)+a}{dfi^3x^4+deh^3+\left(3\,dfhi^2+dei^3\right)x^3+3\left(dfh^2i+dehi^2\right)x^2+\left(dfh^3+3\,deh^2i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)/(d*f*i^3*x^4 + d*e*h^3 + (3*d*f*h*i^2 + d
*e*i^3)*x^3 + 3*(d*f*h^2*i + d*e*h*i^2)*x^2 + (d*f*h^3 + 3*d*e*h^2*i)*x), x
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(fx+e\right)c\right)+a}{\left(dfx+de\right)(ix+h)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)/((d*f*x + d*e)*(i*x + h)^3), x)
```

3.183 $\int \frac{(h+ix)^4(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=579

$$\frac{i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))^2}{2df^5}-\frac{3bi^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{df^5}-\frac{8bi^3(e+fx)^3(fh-ei)(a}{9df^5}$$

```
[Out] (-4*a*b*i*(f*h - e*i)^3*x)/(d*f^4) + (8*b^2*i*(f*h - e*i)^3*x)/(d*f^4) + (3
*b^2*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d*f^5) + (8*b^2*i^3*(f*h - e*i)*(e +
 f*x)^3)/(27*d*f^5) + (b^2*i^4*(e + f*x)^4)/(32*d*f^5) + (7*b^2*(f*h - e*i)
^4*Log[e + f*x]^2)/(12*d*f^5) - (4*b^2*i*(f*h - e*i)^3*(e + f*x)*Log[c*(e +
 f*x)])/(d*f^5) - (4*b*i*(f*h - e*i)^3*(e + f*x)*(a + b*Log[c*(e + f*x)]))/
(d*f^5) - (3*b*i^2*(f*h - e*i)^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(d*f
^5) - (8*b*i^3*(f*h - e*i)*(e + f*x)^3*(a + b*Log[c*(e + f*x)]))/(9*d*f^5)
- (b*i^4*(e + f*x)^4*(a + b*Log[c*(e + f*x)]))/(8*d*f^5) - (7*b*(f*h - e*i)
^4*Log[e + f*x]*(a + b*Log[c*(e + f*x)]))/(6*d*f^5) + (2*i*(f*h - e*i)^3*(e
 + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^5) + (i^2*(f*h - e*i)^2*(e + f*x)^
2*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^5) + ((f*h - e*i)*(h + i*x)^3*(a + b*L
og[c*(e + f*x)])^2)/(3*d*f^2) + ((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(4
*d*f) + ((f*h - e*i)^4*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^5)
```

Rubi [A] time = 1.67445, antiderivative size = 672, normalized size of antiderivative = 1.16, number of steps used = 30, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295, 2330, 2305, 2304, 2319, 43, 2334, 14, 2301}

$$\frac{i^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))^2}{2df^5}-\frac{bi^2(e+fx)^2(fh-ei)^2(a+b\log(c(e+fx)))}{2df^5}-\frac{b(fh-ei)\left(\frac{9i^2(e+fx)^2(fh-ei)}{f^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)^3*x)/(d*f^4) + (8*b^2*i*(f*h - e*i)^3*x)/(d*f^4) + (3
*b^2*i^2*(f*h - e*i)^2*(e + f*x)^2)/(2*d*f^5) + (8*b^2*i^3*(f*h - e*i)*(e +
 f*x)^3)/(27*d*f^5) + (b^2*i^4*(e + f*x)^4)/(32*d*f^5) + (7*b^2*(f*h - e*i)
^4*Log[e + f*x]^2)/(12*d*f^5) - (4*b^2*i*(f*h - e*i)^3*(e + f*x)*Log[c*(e +
 f*x)])/(d*f^5) - (b*i^2*(f*h - e*i)^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])
)/(2*d*f^5) - (b*(f*h - e*i)*((18*i*(f*h - e*i)^2*(e + f*x))/f^2 + (9*i^2*(
f*h - e*i)*(e + f*x)^2)/f^2 + (2*i^3*(e + f*x)^3)/f^2 + (6*(f*h - e*i)^3*Lo
g[e + f*x])/f^2)*(a + b*Log[c*(e + f*x)]))/(9*d*f^3) - (b*((48*i*(f*h - e*i
)^3*(e + f*x))/f^3 + (36*i^2*(f*h - e*i)^2*(e + f*x)^2)/f^3 + (16*i^3*(f*h
- e*i)*(e + f*x)^3)/f^3 + (3*i^4*(e + f*x)^4)/f^3 + (12*(f*h - e*i)^4*Log[e
 + f*x])/f^3)*(a + b*Log[c*(e + f*x)]))/(24*d*f^2) + (2*i*(f*h - e*i)^3*(e
+ f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^5) + (i^2*(f*h - e*i)^2*(e + f*x)^2
*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^5) + ((f*h - e*i)*(h + i*x)^3*(a + b*Lo
g[c*(e + f*x)])^2)/(3*d*f^2) + ((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(4*
d*f) + ((f*h - e*i)^4*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^5)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{(h+183x)^4(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{183\,\text{Subst}\left(\int \left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^3(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(183e-fh)}{}$$

$$= \frac{(h+183x)^4(a+b\log(c(e+fx)))^2}{4df} - \frac{b\,\text{Subst}\left(\int \frac{\left(\frac{-183e+fh}{f}+\frac{183x}{f}\right)^4(a+b\log(cx))}{x}\,dx,\right.}{2df}$$

$$= \frac{b\left(\frac{2928(183e-fh)^3(e+fx)}{f^4} - \frac{401868(183e-fh)^2(e+fx)^2}{f^4} + \frac{32685264(183e-fh)(e+fx)^3}{f^4} - \frac{11215131}{}\right.}{8df}$$

$$= \frac{b(183e-fh)\left(\frac{1098(183e-fh)^2(e+fx)}{f^3} - \frac{100467(183e-fh)(e+fx)^2}{f^3} + \frac{4085658(e+fx)^3}{f^3} - \frac{2(183e}{}\right.}{3df^2}$$

$$= -\frac{366b^2(183e-fh)^3x}{df^4} + \frac{100467b^2(183e-fh)^2(e+fx)^2}{4df^5} - \frac{1361886b^2(183e-}{df^5}$$

$$= \frac{366ab(183e-fh)^3x}{df^4} - \frac{366b^2(183e-fh)^3x}{df^4} + \frac{100467b^2(183e-fh)^2(e+fx)^2}{4df^5}$$

$$= \frac{732ab(183e-fh)^3x}{df^4} - \frac{732b^2(183e-fh)^3x}{df^4} + \frac{33489b^2(183e-fh)^2(e+fx)^2}{df^5}$$

$$= \frac{732ab(183e-fh)^3x}{df^4} - \frac{1464b^2(183e-fh)^3x}{df^4} + \frac{100467b^2(183e-fh)^2(e+fx)}{2df^5}$$

Mathematica [A] time = 0.56488, size = 374, normalized size = 0.65

$$256bi^3(fh-ei)\left(bfx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3(a+b\log(c(e+fx)))\right)+27bi^4\left(bfx\left(6e^2fx+4e^3+4ef^2x^2+f^3x^3\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^4*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (3456*i*(f*h - e*i)^3*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 2592*i^2*(f*h
- e*i)^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])^2 + 1152*i^3*(f*h - e*i)*(e +
 f*x)^3*(a + b*Log[c*(e + f*x)])^2 + 216*i^4*(e + f*x)^4*(a + b*Log[c*(e +
f*x)])^2 + (288*(f*h - e*i)^4*(a + b*Log[c*(e + f*x)])^3)/b - 6912*b*i*(f*h
 - e*i)^3*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 1296*b*i^2*(f*h -
e*i)^2*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])) + 256*b
*i^3*(f*h - e*i)*(b*f*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(a + b*
Log[c*(e + f*x)])) + 27*b*i^4*(b*f*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3
*x^3) - 4*(e + f*x)^4*(a + b*Log[c*(e + f*x)])))/(864*d*f^5)
```

Maple [B] time = 0.066, size = 2310, normalized size = 4.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] -25/12/f^5/d*a^2*e^4*i^4-5845/864/f^5/d*b^2*e^4*i^4-8/9/f/d*b^2*h*i^3*ln(c*
f*x+c*e)*x^3+4/3/f/d*b^2*h*i^3*ln(c*f*x+c*e)^2*x^3+1/2/f/d*a*b*i^4*ln(c*f*x
+c*e)*x^4+1/2/f^3/d*b^2*i^4*ln(c*f*x+c*e)^2*x^2*e^2-1/f^4/d*b^2*i^4*ln(c*f*
x+c*e)^2*x*e^3+22/3/f^4/d*b^2*e^3*h*i^3*ln(c*f*x+c*e)^2-170/9/f^4/d*b^2*e^3
*h*i^3*ln(c*f*x+c*e)-4/f^4/d*a^2*e^3*h*i^3*ln(c*f*x+c*e)+6/f^3/d*a^2*e^2*h^
2*i^2*ln(c*f*x+c*e)-4/f^2/d*a^2*e*h^3*i*ln(c*f*x+c*e)+4/f^2/d*b^2*h^3*i*ln(
c*f*x+c*e)^2*e-8/f/d*b^2*h^3*i*ln(c*f*x+c*e)*x-8/f^2/d*b^2*h^3*i*ln(c*f*x+c
*e)*e-1/3/f^2/d*b^2*i^4*ln(c*f*x+c*e)^2*x^3*e+4/f/d*b^2*h^3*i*ln(c*f*x+c*e)
^2*x+1/4/f/d*a^2*i^4*x^4+1/f/d*a^2*h^4*ln(c*f*x+c*e)+1/3/f/d*b^2*h^4*ln(c*f
*x+c*e)^3+25/6/f^4/d*a*b*e^3*i^4*x+7/18/f^2/d*a*b*i^4*x^3*e-13/12/f^3/d*a*b
*i^4*x^2*e^2-2/f^2/d*a^2*h*i^3*x^2*e-19/9/f^2/d*b^2*e*h*i^3*x^2+170/9/f^3/d
*b^2*e^2*h*i^3*x-4/3/f^2/d*b^2*e*h^3*i*ln(c*f*x+c*e)^3+1/f^5/d*a*b*e^4*i^4*
ln(c*f*x+c*e)^2-9/f^3/d*b^2*h^2*i^2*ln(c*f*x+c*e)^2*e^2-4/3/f^4/d*b^2*e^3*h
*i^3*ln(c*f*x+c*e)^3+3/f/d*b^2*h^2*i^2*ln(c*f*x+c*e)^2*x^2+2/f^3/d*b^2*e^2*
h^2*i^2*ln(c*f*x+c*e)^3-25/6/f^5/d*a*b*e^4*i^4*ln(c*f*x+c*e)+7/18/f^2/d*b^2
*i^4*ln(c*f*x+c*e)*x^3*e-13/12/f^3/d*b^2*i^4*ln(c*f*x+c*e)*x^2*e^2+25/6/f^4
/d*b^2*i^4*ln(c*f*x+c*e)*x*e^3-3/f/d*b^2*h^2*i^2*ln(c*f*x+c*e)*x^2+21/f^3/d
*b^2*h^2*i^2*ln(c*f*x+c*e)*e^2+1/32/f/d*b^2*i^4*x^4+4/f/d*a^2*h^3*i*x-1/f^4
/d*a^2*e^3*i^4*x-37/216/f^2/d*b^2*i^4*x^3*e+115/144/f^3/d*b^2*i^4*x^2*e^2-4
15/72/f^4/d*b^2*i^4*x*e^3+1/3/f^5/d*b^2*e^4*i^4*ln(c*f*x+c*e)^3+1/4/f/d*b^2
*i^4*ln(c*f*x+c*e)^2*x^4-25/12/f^5/d*b^2*i^4*ln(c*f*x+c*e)^2*e^4-1/8/f/d*b^
2*i^4*ln(c*f*x+c*e)*x^4+1/f/d*a*b*h^4*ln(c*f*x+c*e)^2+1/f^5/d*a^2*e^4*i^4*l
n(c*f*x+c*e)+1/2/f^3/d*a^2*i^4*x^2*e^2-1/3/f^2/d*a^2*i^4*x^3*e+3/2/f/d*b^2*
h^2*i^2*x^2+3/f/d*a^2*h^2*i^2*x^2+4/3/f/d*a^2*h*i^3*x^3+415/72/f^5/d*b^2*i^
4*ln(c*f*x+c*e)*e^4+8/27/f/d*b^2*h*i^3*x^3+8/f/d*b^2*h^3*i*x-1/8/f/d*a*b*i^
4*x^4+415/72/f^5/d*a*b*e^4*i^4-4/f^2/d*a*b*h*i^3*ln(c*f*x+c*e)*x^2*e+8/f^3/
d*a*b*h*i^3*ln(c*f*x+c*e)*x*e^2-12/f^2/d*a*b*h^2*i^2*ln(c*f*x+c*e)*x*e+8/f^
2/d*b^2*e*h^3*i-4/f^4/d*a*b*e^3*h*i^3*ln(c*f*x+c*e)^2+10/3/f^2/d*b^2*e*h*i^
3*ln(c*f*x+c*e)*x^2+6/f^3/d*a*b*e^2*h^2*i^2*ln(c*f*x+c*e)^2+6/f/d*a*b*h^2*i
^2*ln(c*f*x+c*e)*x^2-18/f^3/d*a*b*h^2*i^2*ln(c*f*x+c*e)*e^2-2/3/f^2/d*a*b*i
^4*ln(c*f*x+c*e)*x^3*e+8/3/f/d*a*b*h*i^3*ln(c*f*x+c*e)*x^3+44/3/f^4/d*a*b*h
*i^3*ln(c*f*x+c*e)*e^3+4/f^3/d*b^2*e^2*h*i^3*ln(c*f*x+c*e)^2*x+18/f^2/d*a*b
*h^2*i^2*x*e+1/f^3/d*a*b*i^4*ln(c*f*x+c*e)*x^2*e^2-4/f^2/d*a*b*e*h^3*i*ln(c
*f*x+c*e)^2-44/3/f^3/d*b^2*e^2*h*i^3*ln(c*f*x+c*e)*x+8/f/d*a*b*h^3*i*ln(c*f
*x+c*e)*x+8/f^2/d*a*b*h^3*i*ln(c*f*x+c*e)*e-6/f^2/d*b^2*h^2*i^2*ln(c*f*x+c*
e)^2*x*e+18/f^2/d*b^2*h^2*i^2*ln(c*f*x+c*e)*x*e-2/f^4/d*a*b*e^3*i^4*ln(c*f*
x+c*e)*x-2/f^2/d*b^2*e*h*i^3*ln(c*f*x+c*e)^2*x^2+10/3/f^2/d*a*b*h*i^3*x^2*e
-44/3/f^3/d*a*b*h*i^3*x*e^2-8/9/f/d*a*b*h*i^3*x^3-3/f/d*a*b*h^2*i^2*x^2-8/f
^2/d*a*b*e*h^3*i-170/9/f^4/d*a*b*e^3*h*i^3+21/f^3/d*a*b*e^2*h^2*i^2-9/f^3/d
*a^2*e^2*h^2*i^2+4/f^2/d*a^2*e*h^3*i+22/3/f^4/d*a^2*e^3*h*i^3-45/2/f^3/d*b^
2*e^2*h^2*i^2+575/27/f^4/d*b^2*e^3*h*i^3+4/f^3/d*a^2*e^2*h*i^3*x-6/f^2/d*a^
2*e*h^2*i^2*x-21/f^2/d*b^2*h^2*i^2*x*e-8/f/d*a*b*h^3*i*x
```

Maxima [B] time = 1.36641, size = 1926, normalized size = 3.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] 8*a*b*h^3*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + 1/6*a*b*i
^4*(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 -
12*e^3*x)/(d*f^4))*log(c*f*x + c*e) - 4/3*a*b*h*i^3*(6*e^3*log(f*x + e)/(d*
f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))*log(c*f*x + c*e) + 6*a*b*
h^2*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x +
c*e) - a*b*h^4*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2
 + 2*log(f*x + e)*log(c))/(d*f)) + 4*a^2*h^3*i*(x/(d*f) - e*log(f*x + e)/(d
*f^2)) + 1/12*a^2*i^4*(12*e^4*log(f*x + e)/(d*f^5) + (3*f^3*x^4 - 4*e*f^2*x
^3 + 6*e^2*f*x^2 - 12*e^3*x)/(d*f^4)) - 2/3*a^2*h*i^3*(6*e^3*log(f*x + e)/(
d*f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3*a^2*h^2*i^2*(2*e^2*
log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + 1/3*b^2*h^4*log(c*f*x + c
*e)^3/(d*f) + 2*a*b*h^4*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h^4*l
og(d*f*x + d*e)/(d*f) + 4*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b
*h^3*i/(d*f^2) - 3*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*
x + e))*a*b*h^2*i^2/(d*f^3) - 4/3*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*
e)*(c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h^3*i/(c^2*d*f^
2) - 2/9*(4*f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 6
6*e^3*log(f*x + e))*a*b*h*i^3/(d*f^4) - 1/72*(9*f^4*x^4 - 28*e*f^3*x^3 + 78
*e^2*f^2*x^2 + 72*e^4*log(f*x + e)^2 - 300*e^3*f*x + 300*e^4*log(f*x + e))*
a*b*i^4/(d*f^5) + 1/2*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*
c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*
e)^2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*h^2*i^2/(c^3*
d*f^3) - 1/27*(36*c^4*e^3*log(c*f*x + c*e)^3 - 4*(c*f*x + c*e)^3*(9*c*log(c
*f*x + c*e)^2 - 6*c*log(c*f*x + c*e) + 2*c) + 81*(2*c^2*e*log(c*f*x + c*e)^
2 - 2*c^2*e*log(c*f*x + c*e) + c^2*e)*(c*f*x + c*e)^2 - 324*(c^3*e^2*log(c*
f*x + c*e)^2 - 2*c^3*e^2*log(c*f*x + c*e) + 2*c^3*e^2)*(c*f*x + c*e))*b^2*h
*i^3/(c^4*d*f^4) + 1/864*(288*c^5*e^4*log(c*f*x + c*e)^3 + 27*(c*f*x + c*e)
^4*(8*c*log(c*f*x + c*e)^2 - 4*c*log(c*f*x + c*e) + c) - 128*(9*c^2*e*log(c
*f*x + c*e)^2 - 6*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e)^3 + 1296*
(2*c^3*e^2*log(c*f*x + c*e)^2 - 2*c^3*e^2*log(c*f*x + c*e) + c^3*e^2)*(c*f*
x + c*e)^2 - 3456*(c^4*e^3*log(c*f*x + c*e)^2 - 2*c^4*e^3*log(c*f*x + c*e)
+ 2*c^4*e^3)*(c*f*x + c*e))*b^2*i^4/(c^5*d*f^5)
```

Fricas [A] time = 1.92536, size = 2012, normalized size = 3.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] 1/864*(27*(8*a^2 - 4*a*b + b^2)*f^4*i^4*x^4 + 4*(32*(9*a^2 - 6*a*b + 2*b^2)
*f^4*h*i^3 - (72*a^2 - 84*a*b + 37*b^2)*e*f^3*i^4)*x^3 + 288*(b^2*f^4*h^4 -
 4*b^2*e*f^3*h^3*i + 6*b^2*e^2*f^2*h^2*i^2 - 4*b^2*e^3*f*h*i^3 + b^2*e^4*i^
4)*log(c*f*x + c*e)^3 + 6*(216*(2*a^2 - 2*a*b + b^2)*f^4*h^2*i^2 - 16*(18*a
^2 - 30*a*b + 19*b^2)*e*f^3*h*i^3 + (72*a^2 - 156*a*b + 115*b^2)*e^2*f^2*i^
4)*x^2 + 72*(3*b^2*f^4*i^4*x^4 + 12*a*b*f^4*h^4 - 48*(a*b - b^2)*e*f^3*h^3*
i + 36*(2*a*b - 3*b^2)*e^2*f^2*h^2*i^2 - 8*(6*a*b - 11*b^2)*e^3*f*h*i^3 + (
12*a*b - 25*b^2)*e^4*i^4 + 4*(4*b^2*f^4*h*i^3 - b^2*e*f^3*i^4)*x^3 + 6*(6*b
^2*f^4*h^2*i^2 - 4*b^2*e*f^3*h*i^3 + b^2*e^2*f^2*i^4)*x^2 + 12*(4*b^2*f^4*h
^3*i - 6*b^2*e*f^3*h^2*i^2 + 4*b^2*e^2*f^2*h*i^3 - b^2*e^3*f*i^4)*x)*log(c*
f*x + c*e)^2 + 12*(288*(a^2 - 2*a*b + 2*b^2)*f^4*h^3*i - 216*(2*a^2 - 6*a*b
 + 7*b^2)*e*f^3*h^2*i^2 + 16*(18*a^2 - 66*a*b + 85*b^2)*e^2*f^2*h*i^3 - (72
```

```
*a^2 - 300*a*b + 415*b^2)*e^3*f*i^4)*x + 12*(9*(4*a*b - b^2)*f^4*i^4*x^4 +
72*a^2*f^4*h^4 - 288*(a^2 - 2*a*b + 2*b^2)*e*f^3*h^3*i + 216*(2*a^2 - 6*a*b
 + 7*b^2)*e^2*f^2*h^2*i^2 - 16*(18*a^2 - 66*a*b + 85*b^2)*e^3*f*h*i^3 + (72
*a^2 - 300*a*b + 415*b^2)*e^4*i^4 + 4*(16*(3*a*b - b^2)*f^4*h*i^3 - (12*a*b
 - 7*b^2)*e*f^3*i^4)*x^3 + 6*(36*(2*a*b - b^2)*f^4*h^2*i^2 - 8*(6*a*b - 5*b
^2)*e*f^3*h*i^3 + (12*a*b - 13*b^2)*e^2*f^2*i^4)*x^2 + 12*(48*(a*b - b^2)*f
^4*h^3*i - 36*(2*a*b - 3*b^2)*e*f^3*h^2*i^2 + 8*(6*a*b - 11*b^2)*e^2*f^2*h*
i^3 - (12*a*b - 25*b^2)*e^3*f*i^4)*x)*log(c*f*x + c*e))/(d*f^5)
```

Sympy [B] time = 5.91834, size = 1394, normalized size = 2.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**4*(8*a**2*i**4 - 4*a*b*i**4 + b**2*i**4)/(32*d*f) - x**3*(72*a**2*e*i**4
 - 288*a**2*f*h*i**3 - 84*a*b*e*i**4 + 192*a*b*f*h*i**3 + 37*b**2*e*i**4 -
64*b**2*f*h*i**3)/(216*d*f**2) + x**2*(72*a**2*e**2*i**4 - 288*a**2*e*f*h*i
**3 + 432*a**2*f**2*h**2*i**2 - 156*a*b*e**2*i**4 + 480*a*b*e*f*h*i**3 - 43
2*a*b*f**2*h**2*i**2 + 115*b**2*e**2*i**4 - 304*b**2*e*f*h*i**3 + 216*b**2*
f**2*h**2*i**2)/(144*d*f**3) - x*(72*a**2*e**3*i**4 - 288*a**2*e**2*f*h*i**
3 + 432*a**2*e*f**2*h**2*i**2 - 288*a**2*f**3*h**3*i - 300*a*b*e**3*i**4 +
1056*a*b*e**2*f*h*i**3 - 1296*a*b*e*f**2*h**2*i**2 + 576*a*b*f**3*h**3*i +
415*b**2*e**3*i**4 - 1360*b**2*e**2*f*h*i**3 + 1512*b**2*e*f**2*h**2*i**2 -
 576*b**2*f**3*h**3*i)/(72*d*f**4) + (-144*a*b*e**3*i**4*x + 576*a*b*e**2*f
*h*i**3*x + 72*a*b*e**2*f*i**4*x**2 - 864*a*b*e*f**2*h**2*i**2*x - 288*a*b*
e*f**2*h*i**3*x**2 - 48*a*b*e*f**2*i**4*x**3 + 576*a*b*f**3*h**3*i*x + 432*
a*b*f**3*h**2*i**2*x**2 + 192*a*b*f**3*h*i**3*x**3 + 36*a*b*f**3*i**4*x**4
+ 300*b**2*e**3*i**4*x - 1056*b**2*e**2*f*h*i**3*x - 78*b**2*e**2*f*i**4*x*
*2 + 1296*b**2*e*f**2*h**2*i**2*x + 240*b**2*e*f**2*h*i**3*x**2 + 28*b**2*e
*f**2*i**4*x**3 - 576*b**2*f**3*h**3*i*x - 216*b**2*f**3*h**2*i**2*x**2 - 6
4*b**2*f**3*h*i**3*x**3 - 9*b**2*f**3*i**4*x**4)*log(c*(e + f*x))/(72*d*f**
4) + (b**2*e**4*i**4 - 4*b**2*e**3*f*h*i**3 + 6*b**2*e**2*f**2*h**2*i**2 -
4*b**2*e*f**3*h**3*i + b**2*f**4*h**4)*log(c*(e + f*x))**3/(3*d*f**5) + (72
*a**2*e**4*i**4 - 288*a**2*e**3*f*h*i**3 + 432*a**2*e**2*f**2*h**2*i**2 - 2
88*a**2*e*f**3*h**3*i + 72*a**2*f**4*h**4 - 300*a*b*e**4*i**4 + 1056*a*b*e*
*3*f*h*i**3 - 1296*a*b*e**2*f**2*h**2*i**2 + 576*a*b*e*f**3*h**3*i + 415*b*
*2*e**4*i**4 - 1360*b**2*e**3*f*h*i**3 + 1512*b**2*e**2*f**2*h**2*i**2 - 57
6*b**2*e*f**3*h**3*i)*log(e + f*x)/(72*d*f**5) + (12*a*b*e**4*i**4 - 48*a*b
*e**3*f*h*i**3 + 72*a*b*e**2*f**2*h**2*i**2 - 48*a*b*e*f**3*h**3*i + 12*a*b
*f**4*h**4 - 25*b**2*e**4*i**4 + 88*b**2*e**3*f*h*i**3 - 12*b**2*e**3*f*i**
4*x - 108*b**2*e**2*f**2*h**2*i**2 + 48*b**2*e**2*f**2*h*i**3*x + 6*b**2*e*
*2*f**2*i**4*x**2 + 48*b**2*e*f**3*h**3*i - 72*b**2*e*f**3*h**2*i**2*x - 24
*b**2*e*f**3*h*i**3*x**2 - 4*b**2*e*f**3*i**4*x**3 + 48*b**2*f**4*h**3*i*x
+ 36*b**2*f**4*h**2*i**2*x**2 + 16*b**2*f**4*h*i**3*x**3 + 3*b**2*f**4*i**4
*x**4)*log(c*(e + f*x))**2/(12*d*f**5)
```

Giac [B] time = 1.20837, size = 2192, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")

[Out] 1/864*(3456*b^2*f^4*h^3*i*x*log(c*f*x + c*e)^2 - 1152*b^2*f^4*h*i*x^3*log(c
*f*x + c*e)^2 + 288*b^2*f^4*h^4*log(c*f*x + c*e)^3 - 1152*b^2*f^3*h^3*i*e*l
og(c*f*x + c*e)^3 + 6912*a*b*f^4*h^3*i*x*log(c*f*x + c*e) - 6912*b^2*f^4*h^
3*i*x*log(c*f*x + c*e) - 2304*a*b*f^4*h*i*x^3*log(c*f*x + c*e) + 768*b^2*f^
4*h*i*x^3*log(c*f*x + c*e) + 864*a*b*f^4*h^4*log(c*f*x + c*e)^2 - 2592*b^2*
f^4*h^2*x^2*log(c*f*x + c*e)^2 + 216*b^2*f^4*x^4*log(c*f*x + c*e)^2 - 3456*
a*b*f^3*h^3*i*e*log(c*f*x + c*e)^2 + 3456*b^2*f^3*h^3*i*e*log(c*f*x + c*e)^
2 + 1728*b^2*f^3*h*i*x^2*e*log(c*f*x + c*e)^2 + 3456*a^2*f^4*h^3*i*x - 6912
*a*b*f^4*h^3*i*x + 6912*b^2*f^4*h^3*i*x - 1152*a^2*f^4*h*i*x^3 + 768*a*b*f^
4*h*i*x^3 - 256*b^2*f^4*h*i*x^3 - 5184*a*b*f^4*h^2*x^2*log(c*f*x + c*e) + 2
592*b^2*f^4*h^2*x^2*log(c*f*x + c*e) + 432*a*b*f^4*x^4*log(c*f*x + c*e) - 1
08*b^2*f^4*x^4*log(c*f*x + c*e) + 3456*a*b*f^3*h*i*x^2*e*log(c*f*x + c*e) -
 2880*b^2*f^3*h*i*x^2*e*log(c*f*x + c*e) + 5184*b^2*f^3*h^2*x*e*log(c*f*x +
 c*e)^2 - 288*b^2*f^3*x^3*e*log(c*f*x + c*e)^2 + 864*a^2*f^4*h^4*log(f*x +
e) - 3456*a^2*f^3*h^3*i*e*log(f*x + e) + 6912*a*b*f^3*h^3*i*e*log(f*x + e)
- 6912*b^2*f^3*h^3*i*e*log(f*x + e) - 2592*a^2*f^4*h^2*x^2 + 2592*a*b*f^4*h
^2*x^2 - 1296*b^2*f^4*h^2*x^2 + 216*a^2*f^4*x^4 - 108*a*b*f^4*x^4 + 27*b^2*
f^4*x^4 + 1728*a^2*f^3*h*i*x^2*e - 2880*a*b*f^3*h*i*x^2*e + 1824*b^2*f^3*h*
i*x^2*e + 10368*a*b*f^3*h^2*x*e*log(c*f*x + c*e) - 15552*b^2*f^3*h^2*x*e*lo
g(c*f*x + c*e) - 576*a*b*f^3*x^3*e*log(c*f*x + c*e) + 336*b^2*f^3*x^3*e*log
(c*f*x + c*e) - 3456*b^2*f^2*h*i*x*e^2*log(c*f*x + c*e)^2 - 1728*b^2*f^2*h^
2*e^2*log(c*f*x + c*e)^3 + 5184*a^2*f^3*h^2*x*e - 15552*a*b*f^3*h^2*x*e + 1
8144*b^2*f^3*h^2*x*e - 288*a^2*f^3*x^3*e + 336*a*b*f^3*x^3*e - 148*b^2*f^3*
x^3*e - 6912*a*b*f^2*h*i*x*e^2*log(c*f*x + c*e) + 12672*b^2*f^2*h*i*x*e^2*l
og(c*f*x + c*e) - 5184*a*b*f^2*h^2*e^2*log(c*f*x + c*e)^2 + 7776*b^2*f^2*h^
2*e^2*log(c*f*x + c*e)^2 + 432*b^2*f^2*x^2*e^2*log(c*f*x + c*e)^2 + 1152*b^
2*f*h*i*e^3*log(c*f*x + c*e)^3 - 3456*a^2*f^2*h*i*x*e^2 + 12672*a*b*f^2*h*i
*x*e^2 - 16320*b^2*f^2*h*i*x*e^2 + 864*a*b*f^2*x^2*e^2*log(c*f*x + c*e) - 9
36*b^2*f^2*x^2*e^2*log(c*f*x + c*e) + 3456*a*b*f*h*i*e^3*log(c*f*x + c*e)^2
 - 6336*b^2*f*h*i*e^3*log(c*f*x + c*e)^2 - 5184*a^2*f^2*h^2*e^2*log(f*x + e
) + 15552*a*b*f^2*h^2*e^2*log(f*x + e) - 18144*b^2*f^2*h^2*e^2*log(f*x + e)
 + 432*a^2*f^2*x^2*e^2 - 936*a*b*f^2*x^2*e^2 + 690*b^2*f^2*x^2*e^2 - 864*b^
2*f*x*e^3*log(c*f*x + c*e)^2 + 3456*a^2*f*h*i*e^3*log(f*x + e) - 12672*a*b*
f*h*i*e^3*log(f*x + e) + 16320*b^2*f*h*i*e^3*log(f*x + e) - 1728*a*b*f*x*e^
3*log(c*f*x + c*e) + 3600*b^2*f*x*e^3*log(c*f*x + c*e) + 288*b^2*e^4*log(c*
f*x + c*e)^3 - 864*a^2*f*x*e^3 + 3600*a*b*f*x*e^3 - 4980*b^2*f*x*e^3 + 864*
a*b*e^4*log(c*f*x + c*e)^2 - 1800*b^2*e^4*log(c*f*x + c*e)^2 + 864*a^2*e^4*
log(f*x + e) - 3600*a*b*e^4*log(f*x + e) + 4980*b^2*e^4*log(f*x + e))/(d*f^
5)
```

3.184 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=464

$$\frac{i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))^2}{2df^4}-\frac{3bi^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}+\frac{(fh-ei)^3(a+b\log(c(e+$$

```
[Out] (-4*a*b*i*(f*h - e*i)^2*x)/(d*f^3) + (6*b^2*i*(f*h - e*i)^2*x)/(d*f^3) + (3
*b^2*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f^4) + (2*b^2*i^3*(e + f*x)^3)/(27*d
*f^4) + (b^2*(f*h - e*i)^3*Log[e + f*x]^2)/(3*d*f^4) - (4*b^2*i*(f*h - e*i)
^2*(e + f*x)*Log[c*(e + f*x)])/(d*f^4) - (2*b*i*(f*h - e*i)^2*(e + f*x)*(a
+ b*Log[c*(e + f*x)]))/(d*f^4) - (3*b*i^2*(f*h - e*i)*(e + f*x)^2*(a + b*Lo
g[c*(e + f*x)]))/(2*d*f^4) - (2*b*i^3*(e + f*x)^3*(a + b*Log[c*(e + f*x)]))
/(9*d*f^4) - (2*b*(f*h - e*i)^3*Log[e + f*x]*(a + b*Log[c*(e + f*x)]))/(3*d
*f^4) + (2*i*(f*h - e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^4) +
(i^2*(f*h - e*i)*(e + f*x)^2*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^4) + ((h +
i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(3*d*f) + ((f*h - e*i)^3*(a + b*Log[c*(e
 + f*x)])^3)/(3*b*d*f^4)
```

Rubi [A] time = 0.981334, antiderivative size = 459, normalized size of antiderivative = 0.99, number of steps used = 24, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295, 2330, 2305, 2304, 2319, 43, 2334, 14, 2301}

$$\frac{i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))^2}{2df^4}-\frac{bi^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))}{2df^4}-\frac{b\left(\frac{9i^2(e+fx)^2(fh-ei)}{f^2}+\frac{18i(e+fx)}{f^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-4*a*b*i*(f*h - e*i)^2*x)/(d*f^3) + (6*b^2*i*(f*h - e*i)^2*x)/(d*f^3) + (3
*b^2*i^2*(f*h - e*i)*(e + f*x)^2)/(4*d*f^4) + (2*b^2*i^3*(e + f*x)^3)/(27*d
*f^4) + (b^2*(f*h - e*i)^3*Log[e + f*x]^2)/(3*d*f^4) - (4*b^2*i*(f*h - e*i)
^2*(e + f*x)*Log[c*(e + f*x)])/(d*f^4) - (b*i^2*(f*h - e*i)*(e + f*x)^2*(a
+ b*Log[c*(e + f*x)]))/(2*d*f^4) - (b*((18*i*(f*h - e*i)^2*(e + f*x))/f^2 +
 (9*i^2*(f*h - e*i)*(e + f*x)^2)/f^2 + (2*i^3*(e + f*x)^3)/f^2 + (6*(f*h -
e*i)^3*Log[e + f*x])/f^2)*(a + b*Log[c*(e + f*x)]))/(9*d*f^2) + (2*i*(f*h -
 e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^4) + (i^2*(f*h - e*i)*(e
 + f*x)^2*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^4) + ((h + i*x)^3*(a + b*Log[c
*(e + f*x)])^2)/(3*d*f) + ((f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^3)/(3*b*d
*f^4)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int \frac{(h+184x)^3(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{184\,\text{Subst}\left(\int \left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^2(a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(184e-fh)}{}$$

$$= \frac{(h+184x)^3(a+b\log(c(e+fx)))^2}{3df} - \frac{(2b)\,\text{Subst}\left(\int \frac{\left(\frac{-184e+fh}{f}+\frac{184x}{f}\right)^3(a+b\log(cx))}{x}\,d\right.}{3df}$$

$$= -\frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3}-\frac{152352(184e-fh)(e+fx)^2}{f^3}+\frac{6229504(e+fx)^3}{f^3}-\frac{3(184e-fh)^3\log(e}{f^3}\right.}{9df}$$

$$= -\frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3}-\frac{152352(184e-fh)(e+fx)^2}{f^3}+\frac{6229504(e+fx)^3}{f^3}-\frac{3(184e-fh)^3\log(e}{f^3}\right.}{9df}$$

$$= -\frac{368ab(184e-fh)^2x}{df^3} - \frac{2b\left(\frac{1656(184e-fh)^2(e+fx)}{f^3}-\frac{152352(184e-fh)(e+fx)^2}{f^3}+\frac{622950}{f}\right.}{9df}$$

$$= -\frac{736ab(184e-fh)^2x}{df^3} + \frac{368b^2(184e-fh)^2x}{df^3} - \frac{8464b^2(184e-fh)(e+fx)^2}{df^4} -$$

$$= -\frac{736ab(184e-fh)^2x}{df^3} + \frac{1104b^2(184e-fh)^2x}{df^3} - \frac{25392b^2(184e-fh)(e+fx)^2}{df^4}$$

Mathematica [A] time = 0.305459, size = 267, normalized size = 0.58

$$\frac{8bi^3\left(bfx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3(a+b\log(c(e+fx)))\right)+162i^2(e+fx)^2(fh-ei)(a+b\log(c(e+fx)))^2+81bi}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (324*i*(f*h - e*i)^2*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 162*i^2*(f*h -
e*i)*(e + f*x)^2*(a + b*Log[c*(e + f*x)])^2 + 36*i^3*(e + f*x)^3*(a + b*Log
[c*(e + f*x)])^2 + (36*(f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^3)/b - 648*b*
i*(f*h - e*i)^2*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 81*b*i^2*(f*
h - e*i)*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])) + 8*b
*i^3*(b*f*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(a + b*Log[c*(e + f
*x)])))/(108*d*f^4)
```

Maple [B] time = 0.064, size = 1485, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] 575/108/f^4/d*b^2*e^3*i^3+11/6/f^4/d*a^2*e^3*i^3-1/3/f^4/d*b^2*e^3*i^3*ln(c
*f*x+c*e)^3+11/6/f^4/d*b^2*e^3*i^3*ln(c*f*x+c*e)^2-85/18/f^4/d*b^2*e^3*i^3*
ln(c*f*x+c*e)-1/f^4/d*a^2*e^3*i^3*ln(c*f*x+c*e)+1/f/d*a*b*h^3*ln(c*f*x+c*e)
^2+1/3/f/d*b^2*i^3*ln(c*f*x+c*e)^2*x^3-6/f^2/d*a*b*e*h*i^2*ln(c*f*x+c*e)*x+
2/3/f/d*a*b*i^3*ln(c*f*x+c*e)*x^3+1/3/f/d*a^2*i^3*x^3+1/3/f/d*b^2*h^3*ln(c*
f*x+c*e)^3+1/f/d*a^2*h^3*ln(c*f*x+c*e)+2/27/f/d*b^2*i^3*x^3-2/9/f/d*b^2*i^3
*ln(c*f*x+c*e)*x^3+1/f^3/d*a^2*e^2*i^3*x+3/f/d*a^2*h^2*i*x+6/f/d*b^2*h^2*i*
x+3/2/f/d*a^2*h*i^2*x^2+3/4/f/d*b^2*h*i^2*x^2-19/36/f^2/d*b^2*e*i^3*x^2+85/
18/f^3/d*b^2*e^2*i^3*x-2/9/f/d*a*b*i^3*x^3-1/2/f^2/d*a^2*e*i^3*x^2-11/3/f^3
/d*b^2*e^2*i^3*ln(c*f*x+c*e)*x+5/6/f^2/d*b^2*e*i^3*ln(c*f*x+c*e)*x^2-3/f^2/
d*a^2*e*h^2*i*ln(c*f*x+c*e)+3/f/d*b^2*h^2*i*ln(c*f*x+c*e)^2*x+11/3/f^4/d*a*
b*i^3*ln(c*f*x+c*e)*e^3+3/2/f/d*b^2*h*i^2*ln(c*f*x+c*e)^2*x^2-1/2/f^2/d*b^2
*e*i^3*ln(c*f*x+c*e)^2*x^2+1/f^3/d*b^2*e^2*i^3*ln(c*f*x+c*e)^2*x-6/f^2/d*b^
2*h^2*i*ln(c*f*x+c*e)*e-1/f^4/d*a*b*e^3*i^3*ln(c*f*x+c*e)^2+21/2/f^3/d*a*b*
e^2*h*i^2+3/f^2/d*b^2*h^2*i*ln(c*f*x+c*e)^2*e-6/f/d*b^2*h^2*i*ln(c*f*x+c*e)
*x+1/f^3/d*b^2*e^2*h*i^2*ln(c*f*x+c*e)^3+3/f^3/d*a^2*e^2*h*i^2*ln(c*f*x+c*e
)-1/f^2/d*a*b*i^3*ln(c*f*x+c*e)*x^2*e+9/f^2/d*b^2*e*h*i^2*ln(c*f*x+c*e)*x+6
/f/d*a*b*h^2*i*ln(c*f*x+c*e)*x-9/f^3/d*a*b*e^2*h*i^2*ln(c*f*x+c*e)+9/f^2/d*
a*b*e*h*i^2*x+2/f^3/d*a*b*i^3*ln(c*f*x+c*e)*x*e^2-3/f^2/d*a*b*e*h^2*i*ln(c*
f*x+c*e)^2+6/f^2/d*a*b*h^2*i*ln(c*f*x+c*e)*e+3/f/d*a*b*h*i^2*ln(c*f*x+c*e)*
x^2+3/f^3/d*a*b*e^2*h*i^2*ln(c*f*x+c*e)^2-3/f^2/d*b^2*e*h*i^2*ln(c*f*x+c*e)
^2*x-6/f^2/d*a*b*e*h^2*i-3/f^2/d*a^2*e*h*i^2*x-11/3/f^3/d*a*b*i^3*x*e^2-21/
2/f^2/d*b^2*e*h*i^2*x-3/2/f/d*a*b*h*i^2*x^2-6/f/d*a*b*h^2*i*x+5/6/f^2/d*a*b
*i^3*x^2*e-3/2/f/d*b^2*h*i^2*ln(c*f*x+c*e)*x^2-9/2/f^3/d*b^2*e^2*h*i^2*ln(c
*f*x+c*e)^2+3/f^2/d*a^2*e*h^2*i-9/2/f^3/d*a^2*e^2*h*i^2-45/4/f^3/d*b^2*e^2*
h*i^2-85/18/f^4/d*a*b*e^3*i^3+6/f^2/d*b^2*e*h^2*i+21/2/f^3/d*b^2*e^2*h*i^2*
ln(c*f*x+c*e)-1/f^2/d*b^2*e*h^2*i*ln(c*f*x+c*e)^3
```

<u>Maxima</u> [B] time = 1.35131, size = 1301, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] 6*a*b*h^2*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - 1/3*a*b*i
^3*(6*e^3*log(f*x + e)/(d*f^4) - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3))
*log(c*f*x + c*e) + 3*a*b*h*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*
x)/(d*f^2))*log(c*f*x + c*e) - a*b*h^3*(2*log(c*f*x + c*e)*log(d*f*x + d*e)
/(d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(c))/(d*f)) + 3*a^2*h^2*i*(x/(
d*f) - e*log(f*x + e)/(d*f^2)) - 1/6*a^2*i^3*(6*e^3*log(f*x + e)/(d*f^4) -
(2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/(d*f^3)) + 3/2*a^2*h*i^2*(2*e^2*log(f*x +
 e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + 1/3*b^2*h^3*log(c*f*x + c*e)^3/(d*
f) + 2*a*b*h^3*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h^3*log(d*f*x
+ d*e)/(d*f) + 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b*h^2*i/(d
*f^2) - 3/2*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e))
*a*b*h*i^2/(d*f^3) - (c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f
*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h^2*i/(c^2*d*f^2) - 1/18*(4*
f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*
x + e))*a*b*i^3/(d*f^4) + 1/4*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*
e)^2*(2*c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*
```

```
f*x + c*e)^2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*h*i^2
/(c^3*d*f^3) - 1/108*(36*c^4*e^3*log(c*f*x + c*e)^3 - 4*(c*f*x + c*e)^3*(9*
c*log(c*f*x + c*e)^2 - 6*c*log(c*f*x + c*e) + 2*c) + 81*(2*c^2*e*log(c*f*x
+ c*e)^2 - 2*c^2*e*log(c*f*x + c*e) + c^2*e)*(c*f*x + c*e)^2 - 324*(c^3*e^2
*log(c*f*x + c*e)^2 - 2*c^3*e^2*log(c*f*x + c*e) + 2*c^3*e^2)*(c*f*x + c*e)
)*b^2*i^3/(c^4*d*f^4)
```

Fricas [A] time = 1.80296, size = 1278, normalized size = 2.75

$$\frac{4\left(9a^2-6ab+2b^2\right)f^3i^3x^3+36\left(b^2f^3h^3-3b^2ef^2h^2i+3b^2e^2fhi^2-b^2e^3i^3\right)\log\left(cfx+ce\right)^3+3\left(27\left(2a^2-2ab+b^2\right)f^3h\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] 1/108*(4*(9*a^2 - 6*a*b + 2*b^2)*f^3*i^3*x^3 + 36*(b^2*f^3*h^3 - 3*b^2*e*f^
2*h^2*i + 3*b^2*e^2*f*h*i^2 - b^2*e^3*i^3)*log(c*f*x + c*e)^3 + 3*(27*(2*a^
2 - 2*a*b + b^2)*f^3*h*i^2 - (18*a^2 - 30*a*b + 19*b^2)*e*f^2*i^3)*x^2 + 18
*(2*b^2*f^3*i^3*x^3 + 6*a*b*f^3*h^3 - 18*(a*b - b^2)*e*f^2*h^2*i + 9*(2*a*b
 - 3*b^2)*e^2*f*h*i^2 - (6*a*b - 11*b^2)*e^3*i^3 + 3*(3*b^2*f^3*h*i^2 - b^2
*e*f^2*i^3)*x^2 + 6*(3*b^2*f^3*h^2*i - 3*b^2*e*f^2*h*i^2 + b^2*e^2*f*i^3)*x
)*log(c*f*x + c*e)^2 + 6*(54*(a^2 - 2*a*b + 2*b^2)*f^3*h^2*i - 27*(2*a^2 -
6*a*b + 7*b^2)*e*f^2*h*i^2 + (18*a^2 - 66*a*b + 85*b^2)*e^2*f*i^3)*x + 6*(4
*(3*a*b - b^2)*f^3*i^3*x^3 + 18*a^2*f^3*h^3 - 54*(a^2 - 2*a*b + 2*b^2)*e*f^
2*h^2*i + 27*(2*a^2 - 6*a*b + 7*b^2)*e^2*f*h*i^2 - (18*a^2 - 66*a*b + 85*b^
2)*e^3*i^3 + 3*(9*(2*a*b - b^2)*f^3*h*i^2 - (6*a*b - 5*b^2)*e*f^2*i^3)*x^2
+ 6*(18*(a*b - b^2)*f^3*h^2*i - 9*(2*a*b - 3*b^2)*e*f^2*h*i^2 + (6*a*b - 11
*b^2)*e^2*f*i^3)*x)*log(c*f*x + c*e))/(d*f^4)
```

Sympy [B] time = 4.22983, size = 865, normalized size = 1.86

$$\frac{x^3\left(9a^2i^3-6abi^3+2b^2i^3\right)}{27df}-\frac{x^2\left(18a^2ei^3-54a^2fhi^2-30abei^3+54abfhi^2+19b^2ei^3-27b^2fhi^2\right)}{36df^2}+\frac{x\left(18a^2e^2i^3-54a^2efh\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**3*(9*a**2*i**3 - 6*a*b*i**3 + 2*b**2*i**3)/(27*d*f) - x**2*(18*a**2*e*i*
*3 - 54*a**2*f*h*i**2 - 30*a*b*e*i**3 + 54*a*b*f*h*i**2 + 19*b**2*e*i**3 -
27*b**2*f*h*i**2)/(36*d*f**2) + x*(18*a**2*e**2*i**3 - 54*a**2*e*f*h*i**2 +
 54*a**2*f**2*h**2*i - 66*a*b*e**2*i**3 + 162*a*b*e*f*h*i**2 - 108*a*b*f**2
*h**2*i + 85*b**2*e**2*i**3 - 189*b**2*e*f*h*i**2 + 108*b**2*f**2*h**2*i)/(
18*d*f**3) + (36*a*b*e**2*i**3*x - 108*a*b*e*f*h*i**2*x - 18*a*b*e*f*i**3*x
**2 + 108*a*b*f**2*h**2*i*x + 54*a*b*f**2*h*i**2*x**2 + 12*a*b*f**2*i**3*x*
*3 - 66*b**2*e**2*i**3*x + 162*b**2*e*f*h*i**2*x + 15*b**2*e*f*i**3*x**2 -
108*b**2*f**2*h**2*i*x - 27*b**2*f**2*h*i**2*x**2 - 4*b**2*f**2*i**3*x**3)*
log(c*(e + f*x))/(18*d*f**3) + (-b**2*e**3*i**3 + 3*b**2*e**2*f*h*i**2 - 3*
b**2*e*f**2*h**2*i + b**2*f**3*h**3)*log(c*(e + f*x))**3/(3*d*f**4) - (18*a
**2*e**3*i**3 - 54*a**2*e**2*f*h*i**2 + 54*a**2*e*f**2*h**2*i - 18*a**2*f**
3*h**3 - 66*a*b*e**3*i**3 + 162*a*b*e**2*f*h*i**2 - 108*a*b*e*f**2*h**2*i +
 85*b**2*e**3*i**3 - 189*b**2*e**2*f*h*i**2 + 108*b**2*e*f**2*h**2*i)*log(e
```

```
 + f*x)/(18*d*f**4) + (-6*a*b*e**3*i**3 + 18*a*b*e**2*f*h*i**2 - 18*a*b*e*f
**2*h**2*i + 6*a*b*f**3*h**3 + 11*b**2*e**3*i**3 - 27*b**2*e**2*f*h*i**2 +
6*b**2*e**2*f*i**3*x + 18*b**2*e*f**2*h**2*i - 18*b**2*e*f**2*h*i**2*x - 3*
b**2*e*f**2*i**3*x**2 + 18*b**2*f**3*h**2*i*x + 9*b**2*f**3*h*i**2*x**2 + 2
*b**2*f**3*i**3*x**3)*log(c*(e + f*x))**2/(6*d*f**4)
```

Giac [B] time = 1.18875, size = 1405, normalized size = 3.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/108*(324*b^2*f^3*h^2*i*x*log(c*f*x + c*e)^2 - 36*b^2*f^3*i*x^3*log(c*f*x
+ c*e)^2 + 36*b^2*f^3*h^3*log(c*f*x + c*e)^3 - 108*b^2*f^2*h^2*i*e*log(c*f*
x + c*e)^3 + 648*a*b*f^3*h^2*i*x*log(c*f*x + c*e) - 648*b^2*f^3*h^2*i*x*log
(c*f*x + c*e) - 72*a*b*f^3*i*x^3*log(c*f*x + c*e) + 24*b^2*f^3*i*x^3*log(c*
f*x + c*e) + 108*a*b*f^3*h^3*log(c*f*x + c*e)^2 - 162*b^2*f^3*h*x^2*log(c*f
*x + c*e)^2 - 324*a*b*f^2*h^2*i*e*log(c*f*x + c*e)^2 + 324*b^2*f^2*h^2*i*e*
log(c*f*x + c*e)^2 + 54*b^2*f^2*i*x^2*e*log(c*f*x + c*e)^2 + 324*a^2*f^3*h^
2*i*x - 648*a*b*f^3*h^2*i*x + 648*b^2*f^3*h^2*i*x - 36*a^2*f^3*i*x^3 + 24*a
*b*f^3*i*x^3 - 8*b^2*f^3*i*x^3 - 324*a*b*f^3*h*x^2*log(c*f*x + c*e) + 162*b
^2*f^3*h*x^2*log(c*f*x + c*e) + 108*a*b*f^2*i*x^2*e*log(c*f*x + c*e) - 90*b
^2*f^2*i*x^2*e*log(c*f*x + c*e) + 324*b^2*f^2*h*x*e*log(c*f*x + c*e)^2 + 10
8*a^2*f^3*h^3*log(f*x + e) - 324*a^2*f^2*h^2*i*e*log(f*x + e) + 648*a*b*f^2
*h^2*i*e*log(f*x + e) - 648*b^2*f^2*h^2*i*e*log(f*x + e) - 162*a^2*f^3*h*x^
2 + 162*a*b*f^3*h*x^2 - 81*b^2*f^3*h*x^2 + 54*a^2*f^2*i*x^2*e - 90*a*b*f^2*
i*x^2*e + 57*b^2*f^2*i*x^2*e + 648*a*b*f^2*h*x*e*log(c*f*x + c*e) - 972*b^2
*f^2*h*x*e*log(c*f*x + c*e) - 108*b^2*f*i*x*e^2*log(c*f*x + c*e)^2 - 108*b^
2*f*h*e^2*log(c*f*x + c*e)^3 + 324*a^2*f^2*h*x*e - 972*a*b*f^2*h*x*e + 1134
*b^2*f^2*h*x*e - 216*a*b*f*i*x*e^2*log(c*f*x + c*e) + 396*b^2*f*i*x*e^2*log
(c*f*x + c*e) - 324*a*b*f*h*e^2*log(c*f*x + c*e)^2 + 486*b^2*f*h*e^2*log(c*
f*x + c*e)^2 + 36*b^2*i*e^3*log(c*f*x + c*e)^3 - 108*a^2*f*i*x*e^2 + 396*a*
b*f*i*x*e^2 - 510*b^2*f*i*x*e^2 + 108*a*b*i*e^3*log(c*f*x + c*e)^2 - 198*b^
2*i*e^3*log(c*f*x + c*e)^2 - 324*a^2*f*h*e^2*log(f*x + e) + 972*a*b*f*h*e^2
*log(f*x + e) - 1134*b^2*f*h*e^2*log(f*x + e) + 108*a^2*i*e^3*log(f*x + e)
- 396*a*b*i*e^3*log(f*x + e) + 510*b^2*i*e^3*log(f*x + e))/(d*f^4)
```

3.185 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=238

$$\frac{(fh-ei)^2(a+b\log(c(e+fx)))^3}{3bdf^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+fx)))^2}{2df^3}-\frac{bi^2(e}{}$$

```
[Out] (-4*a*b*i*(f*h - e*i)*x)/(d*f^2) + (4*b^2*i*(f*h - e*i)*x)/(d*f^2) + (b^2*i
^2*(e + f*x)^2)/(4*d*f^3) - (4*b^2*i*(f*h - e*i)*(e + f*x)*Log[c*(e + f*x)]
)/(d*f^3) - (b*i^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^3) + (2*i*(
f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^3) + (i^2*(e + f*x)^2
*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^3) + ((f*h - e*i)^2*(a + b*Log[c*(e + f
*x)])^3)/(3*b*d*f^3)
```

Rubi [A] time = 0.513442, antiderivative size = 238, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295, 2330, 2305, 2304}

$$\frac{(fh-ei)^2(a+b\log(c(e+fx)))^3}{3bdf^3}+\frac{2i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2}{df^3}+\frac{i^2(e+fx)^2(a+b\log(c(e+fx)))^2}{2df^3}-\frac{bi^2(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```


```
[Out] (-4*a*b*i*(f*h - e*i)*x)/(d*f^2) + (4*b^2*i*(f*h - e*i)*x)/(d*f^2) + (b^2*i
^2*(e + f*x)^2)/(4*d*f^3) - (4*b^2*i*(f*h - e*i)*(e + f*x)*Log[c*(e + f*x)]
)/(d*f^3) - (b*i^2*(e + f*x)^2*(a + b*Log[c*(e + f*x)]))/(2*d*f^3) + (2*i*(
f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^3) + (i^2*(e + f*x)^2
*(a + b*Log[c*(e + f*x)])^2)/(2*d*f^3) + ((f*h - e*i)^2*(a + b*Log[c*(e + f
*x)])^3)/(3*b*d*f^3)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
```

```
x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(h+185x)^2(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)^2(a+b\log(cx))^2}{dx}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)^2(a+b\log(cx))^2}{x}\,dx,x,e+fx\right)}{df}$$

$$= \frac{185\,\text{Subst}\left(\int \left(\frac{-185e+fh}{f}+\frac{185x}{f}\right)(a+b\log(cx))^2\,dx,x,e+fx\right)}{df^2} - \frac{(185e-fh)\,\text{S}}{}$$

$$= \frac{185\,\text{Subst}\left(\int \left(\frac{(-185e+fh)(a+b\log(cx))^2}{f}+\frac{185x(a+b\log(cx))^2}{f}\right)dx,x,e+fx\right)}{df^2} - \frac{(185(1}{}$$

$$= -\frac{185(185e-fh)(e+fx)(a+b\log(c(e+fx)))^2}{df^3} + \frac{34225\,\text{Subst}\left(\int x(a+b\log\right.}{df^3}$$

$$= \frac{370ab(185e-fh)x}{df^2} - \frac{370(185e-fh)(e+fx)(a+b\log(c(e+fx)))^2}{df^3} + \frac{34225}{}$$

$$= \frac{740ab(185e-fh)x}{df^2} - \frac{370b^2(185e-fh)x}{df^2} + \frac{34225b^2(e+fx)^2}{4df^3} + \frac{370b^2(185e-}{}$$

$$= \frac{740ab(185e-fh)x}{df^2} - \frac{740b^2(185e-fh)x}{df^2} + \frac{34225b^2(e+fx)^2}{4df^3} + \frac{740b^2(185e-}{}$$

Mathematica [A] time = 0.158805, size = 171, normalized size = 0.72

$$\frac{\frac{4(fh-ei)^2(a+b\log(c(e+fx)))^3}{b} + 24i(e+fx)(fh-ei)(a+b\log(c(e+fx)))^2 - 48bi(fh-ei)(fx(a-b)+b(e+fx)\log(c(e+fx)))}{12df^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (24*i*(f*h - e*i)*(e + f*x)*(a + b*Log[c*(e + f*x)])^2 + 6*i^2*(e + f*x)^2*
(a + b*Log[c*(e + f*x)])^2 + (4*(f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^3)/b
 - 48*b*i*(f*h - e*i)*((a - b)*f*x + b*(e + f*x)*Log[c*(e + f*x)]) + 3*b*i^
2*(b*f*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(e + f*x)])))/(12*d*f^3)
```

Maple [B] time = 0.068, size = 825, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] 1/4/f/d*b^2*i^2*x^2+1/2/f/d*a^2*i^2*x^2+1/3/f/d*b^2*h^2*ln(c*f*x+c*e)^3+1/f
/d*a^2*h^2*ln(c*f*x+c*e)-1/2/f/d*b^2*i^2*ln(c*f*x+c*e)*x^2+1/f/d*a*b*h^2*ln
(c*f*x+c*e)^2+1/f^3/d*a^2*e^2*i^2*ln(c*f*x+c*e)+1/3/f^3/d*b^2*e^2*i^2*ln(c*
f*x+c*e)^3-3/2/f^3/d*b^2*e^2*i^2*ln(c*f*x+c*e)^2+7/2/f^3/d*b^2*e^2*i^2*ln(c
*f*x+c*e)-1/f^2/d*a^2*e*i^2*x+3/f^2/d*b^2*e*i^2*ln(c*f*x+c*e)*x+2/f/d*b^2*h
```

```
*i*ln(c*f*x+c*e)^2*x-2/3/f^2/d*b^2*e*h*i*ln(c*f*x+c*e)^3+1/f^3/d*a*b*e^2*i^
2*ln(c*f*x+c*e)^2-2/f^2/d*a^2*e*h*i*ln(c*f*x+c*e)-3/f^3/d*a*b*e^2*i^2*ln(c*
f*x+c*e)+1/f/d*a*b*i^2*ln(c*f*x+c*e)*x^2-2/f^2/d*a*b*e*h*i*ln(c*f*x+c*e)^2-
2/f^2/d*a*b*e*i^2*ln(c*f*x+c*e)*x-3/2/f^3/d*a^2*e^2*i^2-15/4/f^3/d*b^2*e^2*
i^2+2/f/d*a^2*h*i*x+1/2/f/d*b^2*i^2*ln(c*f*x+c*e)^2*x^2+4/f/d*b^2*h*i*x-1/2
/f/d*a*b*i^2*x^2-7/2/f^2/d*b^2*e*i^2*x+2/f^2/d*a^2*e*h*i-4/f^2/d*a*b*e*h*i+
4/f/d*a*b*h*i*ln(c*f*x+c*e)*x+4/f^2/d*a*b*h*i*ln(c*f*x+c*e)*e-4/f/d*a*b*h*i
*x+3/f^2/d*a*b*e*i^2*x-4/f^2/d*b^2*h*i*ln(c*f*x+c*e)*e+2/f^2/d*b^2*h*i*ln(c
*f*x+c*e)^2*e-4/f/d*b^2*h*i*ln(c*f*x+c*e)*x-1/f^2/d*b^2*e*i^2*ln(c*f*x+c*e)
^2*x+4/f^2/d*b^2*e*h*i+7/2/f^3/d*a*b*e^2*i^2
```

Maxima [B] time = 1.29231, size = 791, normalized size = 3.32

$$4\,abhi\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)+abi^2\left(\frac{2\,e^2\log\left(fx+e\right)}{df^3}+\frac{fx^2-2\,ex}{df^2}\right)\log\left(cfx+ce\right)-abh^2\left(\frac{2\,\log\left(cfx+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] 4*a*b*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) + a*b*i^2*(2*
e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2))*log(c*f*x + c*e) - a*b*
h^2*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f*
x + e)*log(c))/(d*f)) + 2*a^2*h*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + 1/2*
a^2*i^2*(2*e^2*log(f*x + e)/(d*f^3) + (f*x^2 - 2*e*x)/(d*f^2)) + 1/3*b^2*h^
2*log(c*f*x + c*e)^3/(d*f) + 2*a*b*h^2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d
*f) + a^2*h^2*log(d*f*x + d*e)/(d*f) + 2*(e*log(f*x + e)^2 - 2*f*x + 2*e*lo
g(f*x + e))*a*b*h*i/(d*f^2) - 1/2*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x
 + 6*e^2*log(f*x + e))*a*b*i^2/(d*f^3) - 2/3*(c^2*e*log(c*f*x + c*e)^3 - 3*
(c*f*x + c*e)*(c*log(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*h*i/
(c^2*d*f^2) + 1/12*(4*c^3*e^2*log(c*f*x + c*e)^3 + 3*(c*f*x + c*e)^2*(2*c*l
og(c*f*x + c*e)^2 - 2*c*log(c*f*x + c*e) + c) - 24*(c^2*e*log(c*f*x + c*e)^
2 - 2*c^2*e*log(c*f*x + c*e) + 2*c^2*e)*(c*f*x + c*e))*b^2*i^2/(c^3*d*f^3)
```

Fricas [A] time = 1.60253, size = 709, normalized size = 2.98

$$\frac{3\left(2\,a^2-2\,ab+b^2\right)f^2i^2x^2+4\left(b^2f^2h^2-2\,b^2efhi+b^2e^2i^2\right)\log\left(cfx+ce\right)^3+6\left(b^2f^2i^2x^2+2\,abf^2h^2-4\left(ab-b^2\right)efhi\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] 1/12*(3*(2*a^2 - 2*a*b + b^2)*f^2*i^2*x^2 + 4*(b^2*f^2*h^2 - 2*b^2*e*f*h*i
+ b^2*e^2*i^2)*log(c*f*x + c*e)^3 + 6*(b^2*f^2*i^2*x^2 + 2*a*b*f^2*h^2 - 4*
(a*b - b^2)*e*f*h*i + (2*a*b - 3*b^2)*e^2*i^2 + 2*(2*b^2*f^2*h*i - b^2*e*f*
i^2)*x)*log(c*f*x + c*e)^2 + 6*(4*(a^2 - 2*a*b + 2*b^2)*f^2*h*i - (2*a^2 -
6*a*b + 7*b^2)*e*f*i^2)*x + 6*((2*a*b - b^2)*f^2*i^2*x^2 + 2*a^2*f^2*h^2 -
4*(a^2 - 2*a*b + 2*b^2)*e*f*h*i + (2*a^2 - 6*a*b + 7*b^2)*e^2*i^2 + 2*(4*(a
*b - b^2)*f^2*h*i - (2*a*b - 3*b^2)*e*f*i^2)*x)*log(c*f*x + c*e))/(d*f^3)
```

Sympy [B] time = 2.79055, size = 452, normalized size = 1.9

$$\frac{x^2\left(2a^2i^2-2abi^2+b^2i^2\right)}{4df}-\frac{x\left(2a^2ei^2-4a^2fhi-6abei^2+8abfhi+7b^2ei^2-8b^2fhi\right)}{2df^2}+\frac{\left(-4abei^2x+8abfhix+2abfi^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x**2*(2*a**2*i**2 - 2*a*b*i**2 + b**2*i**2)/(4*d*f) - x*(2*a**2*e*i**2 - 4*
a**2*f*h*i - 6*a*b*e*i**2 + 8*a*b*f*h*i + 7*b**2*e*i**2 - 8*b**2*f*h*i)/(2*
d*f**2) + (-4*a*b*e*i**2*x + 8*a*b*f*h*i*x + 2*a*b*f*i**2*x**2 + 6*b**2*e*i
**2*x - 8*b**2*f*h*i*x - b**2*f*i**2*x**2)*log(c*(e + f*x))/(2*d*f**2) + (b
**2*e**2*i**2 - 2*b**2*e*f*h*i + b**2*f**2*h**2)*log(c*(e + f*x))**3/(3*d*f
**3) + (2*a**2*e**2*i**2 - 4*a**2*e*f*h*i + 2*a**2*f**2*h**2 - 6*a*b*e**2*i
**2 + 8*a*b*e*f*h*i + 7*b**2*e**2*i**2 - 8*b**2*e*f*h*i)*log(e + f*x)/(2*d*
f**3) + (2*a*b*e**2*i**2 - 4*a*b*e*f*h*i + 2*a*b*f**2*h**2 - 3*b**2*e**2*i*
*2 + 4*b**2*e*f*h*i - 2*b**2*e*f*i**2*x + 4*b**2*f**2*h*i*x + b**2*f**2*i**
2*x**2)*log(c*(e + f*x))**2/(2*d*f**3)
```

Giac [B] time = 1.17982, size = 756, normalized size = 3.18

$$\frac{24\,b^2f^2hix\log\left(cfx+ce\right)^2+4\,b^2f^2h^2\log\left(cfx+ce\right)^3-8\,b^2fhie\log\left(cfx+ce\right)^3+48\,abf^2hix\log\left(cfx+ce\right)-48\,b^2f^2hi}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/12*(24*b^2*f^2*h*i*x*log(c*f*x + c*e)^2 + 4*b^2*f^2*h^2*log(c*f*x + c*e)^
3 - 8*b^2*f*h*i*e*log(c*f*x + c*e)^3 + 48*a*b*f^2*h*i*x*log(c*f*x + c*e) -
48*b^2*f^2*h*i*x*log(c*f*x + c*e) + 12*a*b*f^2*h^2*log(c*f*x + c*e)^2 - 6*b
^2*f^2*x^2*log(c*f*x + c*e)^2 - 24*a*b*f*h*i*e*log(c*f*x + c*e)^2 + 24*b^2*
f*h*i*e*log(c*f*x + c*e)^2 + 24*a^2*f^2*h*i*x - 48*a*b*f^2*h*i*x + 48*b^2*f
^2*h*i*x - 12*a*b*f^2*x^2*log(c*f*x + c*e) + 6*b^2*f^2*x^2*log(c*f*x + c*e)
 + 12*b^2*f*x*e*log(c*f*x + c*e)^2 + 12*a^2*f^2*h^2*log(f*x + e) - 24*a^2*f
*h*i*e*log(f*x + e) + 48*a*b*f*h*i*e*log(f*x + e) - 48*b^2*f*h*i*e*log(f*x
+ e) - 6*a^2*f^2*x^2 + 6*a*b*f^2*x^2 - 3*b^2*f^2*x^2 + 24*a*b*f*x*e*log(c*f
*x + c*e) - 36*b^2*f*x*e*log(c*f*x + c*e) - 4*b^2*e^2*log(c*f*x + c*e)^3 +
12*a^2*f*x*e - 36*a*b*f*x*e + 42*b^2*f*x*e - 12*a*b*e^2*log(c*f*x + c*e)^2
+ 18*b^2*e^2*log(c*f*x + c*e)^2 - 12*a^2*e^2*log(f*x + e) + 36*a*b*e^2*log(
f*x + e) - 42*b^2*e^2*log(f*x + e))/(d*f^3)
```

3.186 $\int \frac{(h+ix)(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=113

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{3bdf^2}+\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{df^2}-\frac{2abix}{df}-\frac{2b^2i(e+fx)\log(c(e+fx))}{df^2}+\frac{2b^2ix}{df}$$

```
[Out] (-2*a*b*i*x)/(d*f) + (2*b^2*i*x)/(d*f) - (2*b^2*i*(e + f*x)*Log[c*(e + f*x)
])/(d*f^2) + (i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^2) + ((f*h - e*i
)*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^2)
```

Rubi [A] time = 0.201975, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2411, 12, 2346, 2302, 30, 2296, 2295}

$$\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{3bdf^2}+\frac{i(e+fx)(a+b\log(c(e+fx)))^2}{df^2}-\frac{2abix}{df}-\frac{2b^2i(e+fx)\log(c(e+fx))}{df^2}+\frac{2b^2ix}{df}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-2*a*b*i*x)/(d*f) + (2*b^2*i*x)/(d*f) - (2*b^2*i*(e + f*x)*Log[c*(e + f*x)
])/(d*f^2) + (i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*f^2) + ((f*h - e*i
)*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*f^2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\int \frac{(h+186x)(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-186e+fh}{f}+\frac{186x}{f}\right)(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-186e+fh}{f}+\frac{186x}{f}\right)(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{186\,\text{Subst}\left(\int (a+b\log(cx))^2\,dx, x, e+fx\right)}{df^2} - \frac{(186e-fh)\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\right.}{df^2}$$
$$= \frac{186(e+fx)(a+b\log(c(e+fx)))^2}{df^2} - \frac{(372b)\,\text{Subst}(\int (a+b\log(cx))\,dx, x, e+f}{df^2}$$
$$= -\frac{372abx}{df} + \frac{186(e+fx)(a+b\log(c(e+fx)))^2}{df^2} - \frac{(186e-fh)(a+b\log(c(e+f}{3bdf^2}$$
$$= -\frac{372abx}{df} + \frac{372b^2x}{df} - \frac{372b^2(e+fx)\log(c(e+fx))}{df^2} + \frac{186(e+fx)(a+b\log(c(}{df^2}$$

Mathematica [A] time = 0.0567316, size = 89, normalized size = 0.79

$$\frac{\frac{(fh-ei)(a+b\log(c(e+fx)))^3}{b} + 3i(e+fx)(a+b\log(c(e+fx)))^2 - 6bfix(a-b) - 6b^2i(e+fx)\log(c(e+fx))}{3df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)])^2)/(d*e + d*f*x),x]
```

```
[Out] (-6*(a - b)*b*f*i*x - 6*b^2*i*(e + f*x)*Log[c*(e + f*x)] + 3*i*(e + f*x)*(a
 + b*Log[c*(e + f*x)])^2 + ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^3)/b)/(3*d
*f^2)
```

Maple [B] time = 0.062, size = 341, normalized size = 3.

$$-\frac{a^2ei\ln\left(cfx+ce\right)}{df^2} + \frac{a^2h\ln\left(cfx+ce\right)}{df} + \frac{a^2ix}{df} + \frac{a^2ei}{df^2} - \frac{abei\left(\ln\left(cfx+ce\right)\right)^2}{df^2} + \frac{abh\left(\ln\left(cfx+ce\right)\right)^2}{df} + 2\frac{abi\ln\left(cfx+ce\right.}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] -1/f^2/d*a^2*e*i*ln(c*f*x+c*e)+1/f/d*a^2*h*ln(c*f*x+c*e)+1/f/d*a^2*i*x+1/f^
2/d*a^2*e*i-1/f^2/d*a*b*e*i*ln(c*f*x+c*e)^2+1/f/d*a*b*h*ln(c*f*x+c*e)^2+2/f
/d*a*b*i*ln(c*f*x+c*e)*x+2/f^2/d*a*b*i*ln(c*f*x+c*e)*e-2*a*b*i*x/d/f-2/f^2/
d*a*b*e*i-1/3/f^2/d*b^2*e*i*ln(c*f*x+c*e)^3+1/3/f/d*b^2*h*ln(c*f*x+c*e)^3+1
/f/d*b^2*i*ln(c*f*x+c*e)^2*x+1/f^2/d*b^2*i*ln(c*f*x+c*e)^2*e-2/f/d*b^2*i*ln
(c*f*x+c*e)*x-2/f^2/d*b^2*i*ln(c*f*x+c*e)*e+2*b^2*i*x/d/f+2/f^2/d*b^2*e*i
```

Maxima [B] time = 1.24785, size = 410, normalized size = 3.63

$$2\,abi\left(\frac{x}{df}-\frac{e\log\left(fx+e\right)}{df^2}\right)\log\left(cfx+ce\right)-abh\left(\frac{2\,\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\,\log\left(fx+e\right)\log}{df}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] 2*a*b*i*(x/(d*f) - e*log(f*x + e)/(d*f^2))*log(c*f*x + c*e) - a*b*h*(2*log(
c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f*x + e)*log(
c))/(d*f)) + a^2*i*(x/(d*f) - e*log(f*x + e)/(d*f^2)) + 1/3*b^2*h*log(c*f*x
 + c*e)^3/(d*f) + 2*a*b*h*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) + a^2*h*l
og(d*f*x + d*e)/(d*f) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*a*b*i
/(d*f^2) - 1/3*(c^2*e*log(c*f*x + c*e)^3 - 3*(c*f*x + c*e)*(c*log(c*f*x + c
*e)^2 - 2*c*log(c*f*x + c*e) + 2*c))*b^2*i/(c^2*d*f^2)
```

Fricas [A] time = 1.6003, size = 311, normalized size = 2.75

$$\frac{3\left(a^2-2\,ab+2\,b^2\right)fix+\left(b^2fh-b^2ei\right)\log\left(cfx+ce\right)^3+3\left(b^2fix+abfh-\left(ab-b^2\right)ei\right)\log\left(cfx+ce\right)^2+3\left(a^2fh+2\right.}{3\,df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a^2 - 2*a*b + 2*b^2)*f*i*x + (b^2*f*h - b^2*e*i)*log(c*f*x + c*e)^3
 + 3*(b^2*f*i*x + a*b*f*h - (a*b - b^2)*e*i)*log(c*f*x + c*e)^2 + 3*(a^2*f*
h + 2*(a*b - b^2)*f*i*x - (a^2 - 2*a*b + 2*b^2)*e*i)*log(c*f*x + c*e))/(d*f
^2)
```

Sympy [A] time = 1.7022, size = 168, normalized size = 1.49

$$\frac{x\left(a^2i-2abi+2b^2i\right)}{df}+\frac{\left(2abix-2b^2ix\right)\log\left(c\left(e+fx\right)\right)}{df}+\frac{\left(-b^2ei+b^2fh\right)\log\left(c\left(e+fx\right)\right)^3}{3df^2}-\frac{\left(a^2ei-a^2fh-2abei+2\right.}{df^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] x*(a**2*i - 2*a*b*i + 2*b**2*i)/(d*f) + (2*a*b*i*x - 2*b**2*i*x)*log(c*(e +
 f*x))/(d*f) + (-b**2*e*i + b**2*f*h)*log(c*(e + f*x))**3/(3*d*f**2) - (a**
2*e*i - a**2*f*h - 2*a*b*e*i + 2*b**2*e*i)*log(e + f*x)/(d*f**2) + (-a*b*e*
```

```
i + a*b*f*h + b**2*e*i + b**2*f*i*x)*log(c*(e + f*x))**2/(d*f**2)
```

Giac [B] time = 1.17418, size = 324, normalized size = 2.87

$$\frac{3\,b^2fix\log\left(cfx+ce\right)^2+b^2fh\log\left(cfx+ce\right)^3-b^2ie\log\left(cfx+ce\right)^3+6\,abfix\log\left(cfx+ce\right)-6\,b^2fix\log\left(cfx+ce\right)+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/3*(3*b^2*f*i*x*log(c*f*x + c*e)^2 + b^2*f*h*log(c*f*x + c*e)^3 - b^2*i*e*
log(c*f*x + c*e)^3 + 6*a*b*f*i*x*log(c*f*x + c*e) - 6*b^2*f*i*x*log(c*f*x +
 c*e) + 3*a*b*f*h*log(c*f*x + c*e)^2 - 3*a*b*i*e*log(c*f*x + c*e)^2 + 3*b^2
*i*e*log(c*f*x + c*e)^2 + 3*a^2*f*i*x - 6*a*b*f*i*x + 6*b^2*f*i*x + 3*a^2*f
*h*log(f*x + e) - 3*a^2*i*e*log(f*x + e) + 6*a*b*i*e*log(f*x + e) - 6*b^2*i
*e*log(f*x + e))/(d*f^2)
```

3.187 $\int \frac{(a+b\log(c(e+fx)))^2}{de+dfx}\,dx$

Optimal. Leaf size=27

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

Rubi [A] time = 0.0595308, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {2390, 12, 2302, 30}

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int x^2\,dx, x, a+b\log(c(e+fx))\right)}{bdf}$$
$$= \frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Mathematica [A] time = 0.004426, size = 27, normalized size = 1.

$$\frac{(a+b\log(c(e+fx)))^3}{3bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*f)
```

Maple [B] time = 0.06, size = 63, normalized size = 2.3

$$\frac{a^2\ln\left(cfx+ce\right)}{df}+\frac{ab\left(\ln\left(cfx+ce\right)\right)^2}{df}+\frac{b^2\left(\ln\left(cfx+ce\right)\right)^3}{3df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e),x)
```

```
[Out] 1/f/d*a^2*ln(c*f*x+c*e)+1/f/d*a*b*ln(c*f*x+c*e)^2+1/3/f/d*b^2*ln(c*f*x+c*e)
^3
```

Maxima [B] time = 1.16093, size = 173, normalized size = 6.41

$$-ab\left(\frac{2\log\left(cfx+ce\right)\log\left(dfx+de\right)}{df}-\frac{\log\left(fx+e\right)^2+2\log\left(fx+e\right)\log\left(c\right)}{df}\right)+\frac{b^2\log\left(cfx+ce\right)^3}{3df}+\frac{2ab\log\left(cfx+ce\right)}{df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] -a*b*(2*log(c*f*x + c*e)*log(d*f*x + d*e)/(d*f) - (log(f*x + e)^2 + 2*log(f
*x + e)*log(c))/(d*f)) + 1/3*b^2*log(c*f*x + c*e)^3/(d*f) + 2*a*b*log(c*f*x
 + c*e)*log(d*f*x + d*e)/(d*f) + a^2*log(d*f*x + d*e)/(d*f)
```

Fricas [B] time = 1.7152, size = 119, normalized size = 4.41

$$\frac{b^2 \log\left(cfx + ce\right)^3 + 3\,ab \log\left(cfx + ce\right)^2 + 3\,a^2 \log\left(cfx + ce\right)}{3\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*log(c*f*x + c*e)^3 + 3*a*b*log(c*f*x + c*e)^2 + 3*a^2*log(c*f*x +
c*e))/(d*f)
```

Sympy [B] time = 0.485953, size = 51, normalized size = 1.89

$$\frac{a^2 \log\left(de + dfx\right)}{df} + \frac{ab \log\left(c\left(e + fx\right)\right)^2}{df} + \frac{b^2 \log\left(c\left(e + fx\right)\right)^3}{3df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e),x)
```

```
[Out] a**2*log(d*e + d*f*x)/(d*f) + a*b*log(c*(e + f*x))**2/(d*f) + b**2*log(c*(e
 + f*x))**3/(3*d*f)
```

Giac [B] time = 1.2072, size = 72, normalized size = 2.67

$$\frac{b^2 \log\left(\left(fx + e\right)c\right)^3 + 3\,ab \log\left(\left(fx + e\right)c\right)^2 + 3\,a^2 \log\left(\left(fx + e\right)c\right)}{3\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] 1/3*(b^2*log((f*x + e)*c)^3 + 3*a*b*log((f*x + e)*c)^2 + 3*a^2*log((f*x + e
)*c))/(d*f)
```

3.188 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=142

$$\frac{2b\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}+\frac{2b^2\text{PolyLog}\left(3,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)}-\frac{\log\left(\frac{fh-ei}{i(e+fx)}+1\right)(a+b\log(c(e+fx)))^2}{d(fh-ei)}$$

```
[Out] -(((a + b*Log[c*(e + f*x)])^2*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(d*(f*h -
 e*i))) + (2*b*(a + b*Log[c*(e + f*x)])*PolyLog[2, -((f*h - e*i)/(i*(e + f*
x)))])/(d*(f*h - e*i)) + (2*b^2*PolyLog[3, -((f*h - e*i)/(i*(e + f*x)))])/(
d*(f*h - e*i))
```

Rubi [A] time = 0.383463, antiderivative size = 168, normalized size of antiderivative = 1.18, number of steps used = 8, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2411, 12, 2344, 2302, 30, 2317, 2374, 6589}

$$-\frac{2b\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)}+\frac{2b^2\text{PolyLog}\left(3,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)}+\frac{(a+b\log(c(e+fx)))^3}{3bd(fh-ei)}-\frac{\log\left(\frac{f(h+ix)}{fh-ei}\right)(a\ldots}{d(f\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^3/(3*b*d*(f*h - e*i)) - ((a + b*Log[c*(e + f*x)])^
2*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)) - (2*b*(a + b*Log[c*(e +
f*x)])*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)) + (2*b^2*P
olyLog[3, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+188x)(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-188e+fh}{f}+\frac{188x}{f}\right)}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-188e+fh}{f}+\frac{188x}{f}\right)}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x}\,dx, x, e+fx\right)}{d(188e-fh)} + \frac{188\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\frac{-188e+fh}{f}+\frac{188x}{f}}\,dx, x, e+fx\right)}{df(188e-fh)}$$

$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{\text{Subst}\left(\int x^2\,dx, x, a+b\log(c(e+fx))\right)}{bd(188e-fh)} - \frac{(2$$

$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{(a+b\log(c(e+fx)))^3}{3bd(188e-fh)} + \frac{2b(a+b\log(c(e+}{d(188}$$

$$= \frac{\log\left(-\frac{f(h+188x)}{188e-fh}\right)(a+b\log(c(e+fx)))^2}{d(188e-fh)} - \frac{(a+b\log(c(e+fx)))^3}{3bd(188e-fh)} + \frac{2b(a+b\log(c(e+}{d(188}$$

Mathematica [A] time = 0.19291, size = 189, normalized size = 1.33

$$\frac{-6b\text{PolyLog}\left(2,\frac{i(e+fx)}{ei-fh}\right)(a+b\log(c(e+fx))) + 6b^2\text{PolyLog}\left(3,\frac{i(e+fx)}{ei-fh}\right) + 3a^2\log(e+fx) - 3a^2\log(h+ix) - 6ab\log}{3d(fh-ei)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] (3*a^2*Log[e + f*x] + 3*a*b*Log[c*(e + f*x)]^2 + b^2*Log[c*(e + f*x)]^3 - 3
*a^2*Log[h + i*x] - 6*a*b*Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] -
 3*b^2*Log[c*(e + f*x)]^2*Log[(f*(h + i*x))/(f*h - e*i)] - 6*b*(a + b*Log[c
*(e + f*x)])*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] + 6*b^2*PolyLog[3, (i
*(e + f*x))/(-(f*h) + e*i)])/(3*d*(f*h - e*i))
```

Maple [B] time = 0.363, size = 383, normalized size = 2.7

$$-\frac{a^2\ln\left(cfx+ce\right)}{d\left(ei-fh\right)}+\frac{a^2\ln\left(-cei+hcf+\left(cfx+ce\right)i\right)}{d\left(ei-fh\right)}-\frac{b^2\left(\ln\left(cfx+ce\right)\right)^3}{3\,d\left(ei-fh\right)}+\frac{b^2\left(\ln\left(cfx+ce\right)\right)^2}{d\left(ei-fh\right)}\ln\left(1+\frac{\left(cfx+ce\right)i}{-cei+hcf}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] -1/d*a^2/(e*i-f*h)*ln(c*f*x+c*e)+1/d*a^2/(e*i-f*h)*ln(-c*e*i+h*c*f+(c*f*x+c
*e)*i)-1/3/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)^3+1/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)^
2*ln(1+i/(-c*e*i+c*f*h)*(c*f*x+c*e))+2/d*b^2/(e*i-f*h)*ln(c*f*x+c*e)*polylo
g(2,-i/(-c*e*i+c*f*h)*(c*f*x+c*e))-2/d*b^2/(e*i-f*h)*polylog(3,-i/(-c*e*i+c
*f*h)*(c*f*x+c*e))-1/d*a*b/(e*i-f*h)*ln(c*f*x+c*e)^2+2/d*a*b/(e*i-f*h)*dilo
g((-c*e*i+h*c*f+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))+2/d*a*b/(e*i-f*h)*ln(c*f*x+c
*e)*ln((-c*e*i+h*c*f+(c*f*x+c*e)*i)/(-c*e*i+c*f*h))
```

Maxima [B] time = 1.2654, size = 447, normalized size = 3.15

$$a^2\left(\frac{\log\left(fx+e\right)}{dfh-dei}-\frac{\log\left(ix+h\right)}{dfh-dei}\right)-\frac{\left(\log\left(fx+e\right)^2\log\left(\frac{fix+ei}{fh-ei}+1\right)+2\,\mathrm{Li}_2\left(-\frac{fix+ei}{fh-ei}\right)\log\left(fx+e\right)-2\,\mathrm{Li}_3\left(-\frac{fix+ei}{fh-ei}\right)\right)b^2}{\left(fh-ei\right)d}-\frac{2\,(b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^2*(log(f*x + e)/(d*f*h - d*e*i) - log(i*x + h)/(d*f*h - d*e*i)) - (log(f*
x + e)^2*log((f*i*x + e*i)/(f*h - e*i) + 1) + 2*dilog(-(f*i*x + e*i)/(f*h -
 e*i))*log(f*x + e) - 2*polylog(3, -(f*i*x + e*i)/(f*h - e*i)))*b^2/((f*h -
 e*i)*d) - 2*(b^2*log(c) + a*b)*(log(f*x + e)*log((f*i*x + e*i)/(f*h - e*i)
 + 1) + dilog(-(f*i*x + e*i)/(f*h - e*i)))/((f*h - e*i)*d) - (b^2*log(c)^2
+ 2*a*b*log(c))*log(i*x + h)/((f*h - e*i)*d) + 1/3*(b^2*log(f*x + e)^3 + 3*
(b^2*log(c) + a*b)*log(f*x + e)^2 + 3*(b^2*log(c)^2 + 2*a*b*log(c))*log(f*x
 + e))/((f*h - e*i)*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2\log\left(cfx+ce\right)^2+2\,ab\log\left(cfx+ce\right)+a^2}{dfix^2+deh+\left(dfh+dei\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*i*x^2
 + d*e*h + (d*f*h + d*e*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log \left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(i*x + h)), x)
```

3.189 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=273

$$\frac{2bf\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}+\frac{2b^2f\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{2b^2f\text{PolyLog}\left(3,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^2}+\frac{2bf\log\left(\frac{f}{}\right.}{}$$

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*(f*h - e*i)^2*(h + i*x))) + (
2*b*f*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*
i)^2) - (f*(a + b*Log[c*(e + f*x)])^2*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(
d*(f*h - e*i)^2) + (2*b*f*(a + b*Log[c*(e + f*x)])*PolyLog[2, -((f*h - e*i)
/(i*(e + f*x)))])/(d*(f*h - e*i)^2) + (2*b^2*f*PolyLog[2, -((i*(e + f*x))/(
f*h - e*i))])/(d*(f*h - e*i)^2) + (2*b^2*f*PolyLog[3, -((f*h - e*i)/(i*(e +
 f*x)))])/(d*(f*h - e*i)^2)
```

Rubi [A] time = 0.637081, antiderivative size = 300, normalized size of antiderivative = 1.1, number of steps used = 12, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2411, 12, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391}

$$-\frac{2bf\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^2}+\frac{2b^2f\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{2b^2f\text{PolyLog}\left(3,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^2}+\frac{f(a+b\,l}{3bd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] -((i*(e + f*x)*(a + b*Log[c*(e + f*x)])^2)/(d*(f*h - e*i)^2*(h + i*x))) + (
f*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*(f*h - e*i)^2) + (2*b*f*(a + b*Log[c*(
e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^2) - (f*(a + b*Lo
g[c*(e + f*x)])^2*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^2) + (2*b^
2*f*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)^2) - (2*b*f*(a
 + b*Log[c*(e + f*x)])*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h -
e*i)^2) + (2*b^2*f*PolyLog[3, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)
^2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+189x)^2(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx,x,e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx,x,e+fx\right)}{df}$$
$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)}\,dx,x,e+fx\right)}{d(189e-fh)} + \frac{189\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-189e+fh}{f}+\frac{189x}{f}\right)^2}\,dx,x,e+fx\right)}{df(189e-fh)}$$
$$= -\frac{189(e+fx)(a+b\log(c(e+fx)))^2}{d(189e-fh)^2(h+189x)} - \frac{189\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\frac{-189e+fh}{f}+\frac{189x}{f}}\,dx,x,e+fx\right)}{d(189e-fh)^2} + \quad (378b)$$
$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+fx)))^2}{d(189e-fh)^2(h+189x)} - \frac{f\log\left(\right.}{}$$
$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+fx)))^2}{d(189e-fh)^2(h+189x)} - \frac{f\log\left(\right.}{}$$
$$= \frac{2bf\log\left(-\frac{f(h+189x)}{189e-fh}\right)(a+b\log(c(e+fx)))}{d(189e-fh)^2} - \frac{189(e+fx)(a+b\log(c(e+fx)))^2}{d(189e-fh)^2(h+189x)} - \frac{f\log\left(\right.}{}$$

Mathematica [A] time = 0.51819, size = 360, normalized size = 1.32

$$\frac{3ab\left(-2f(h+ix)\left(\text{PolyLog}\left(2,\frac{i(e+fx)}{ei-fh}\right)+\log(c(e+fx))\log\left(\frac{f(h+ix)}{fh-ei}\right)\right)+f(h+ix)\log^2(c(e+fx))+2(fh-ei)\log(c(e+f\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^2),x]
```

```
[Out] (3*a^2*(f*h - e*i) + 3*a^2*f*(h + i*x)*Log[e + f*x] - 3*a^2*f*(h + i*x)*Log
[h + i*x] + 3*a*b*(-2*f*(h + i*x)*Log[e + f*x] + 2*(f*h - e*i)*Log[c*(e + f
*x)] + f*(h + i*x)*Log[c*(e + f*x)]^2 + 2*f*(h + i*x)*Log[h + i*x] - 2*f*(h
 + i*x)*(Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] + PolyLog[2, (i*(e
 + f*x))/(-(f*h) + e*i)])) + b^2*(Log[c*(e + f*x)]*(f*(h + i*x)*Log[c*(e +
f*x)]^2 + 6*f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)] - 3*Log[c*(e + f*x)]
*(i*(e + f*x) + f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)])) - 6*f*(h + i*x
)*(-1 + Log[c*(e + f*x)])*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] + 6*f*(h
 + i*x)*PolyLog[3, (i*(e + f*x))/(-(f*h) + e*i)]))/(3*d*(f*h - e*i)^2*(h +
i*x))
```

Maple [F] time = 2.26, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^2}{\left(dfx+de\right)\left(ix+h\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x)
```

Maxima [B] time = 1.43, size = 840, normalized size = 3.08

$$a^2\left(\frac{f\log\left(fx+e\right)}{df^2h^2-2\,defhi+de^2i^2}-\frac{f\log\left(ix+h\right)}{df^2h^2-2\,defhi+de^2i^2}+\frac{1}{dfh^2-dehi+\left(dfhi-dei^2\right)x}\right)-\frac{\left(\log\left(fx+e\right)^2\log\left(\frac{fix+ei}{fh-ei}+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima
")
```

```
[Out] a^2*(f*log(f*x + e)/(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) - f*log(i*x + h)/
(d*f^2*h^2 - 2*d*e*f*h*i + d*e^2*i^2) + 1/(d*f*h^2 - d*e*h*i + (d*f*h*i - d
*e*i^2)*x)) - (log(f*x + e)^2*log((f*i*x + e*i)/(f*h - e*i) + 1) + 2*dilog(
-(f*i*x + e*i)/(f*h - e*i))*log(f*x + e) - 2*polylog(3, -(f*i*x + e*i)/(f*h
 - e*i)))*b^2*f/((f^2*h^2 - 2*e*f*h*i + e^2*i^2)*d) + 1/3*(3*(f*h - e*i)*b^
2*log(c)^2 + (b^2*f*i*x + b^2*f*h)*log(f*x + e)^3 + 6*(f*h - e*i)*a*b*log(c
) + 3*(a*b*f*h + (f*h*log(c) - e*i)*b^2 + (a*b*f*i + (f*i*log(c) - f*i)*b^2
)*x)*log(f*x + e)^2 + 3*(2*(f*h*log(c) - e*i)*a*b + (f*h*log(c)^2 - 2*e*i*l
og(c))*b^2 + (2*(f*i*log(c) - f*i)*a*b + (f*i*log(c)^2 - 2*f*i*log(c))*b^2)
*x)*log(f*x + e))/((f^2*h^2*i - 2*e*f*h*i^2 + e^2*i^3)*d*x + (f^2*h^3 - 2*e
*f*h^2*i + e^2*h*i^2)*d) - 2*((f*log(c) - f)*b^2 + a*b*f)*(log(f*x + e)*log
((f*i*x + e*i)/(f*h - e*i) + 1) + dilog(-(f*i*x + e*i)/(f*h - e*i)))/((f^2*
h^2 - 2*e*f*h*i + e^2*i^2)*d) - (2*(f*log(c) - f)*a*b + (f*log(c)^2 - 2*f*l
og(c))*b^2)*log(i*x + h)/((f^2*h^2 - 2*e*f*h*i + e^2*i^2)*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left(cfx+ce\right)^2+2\,ab\log\left(cfx+ce\right)+a^2}{dfi^2x^3+deh^2+\left(2\,dfhi+dei^2\right)x^2+\left(dfh^2+2\,dehi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*i^2*x
^3 + d*e*h^2 + (2*d*f*h*i + d*e*i^2)*x^2 + (d*f*h^2 + 2*d*e*h*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(i*x + h)^2), x)
```

3.190 $\int \frac{(a+b\log(c(e+fx)))^2}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=485

$$\frac{2bf^2\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}-\frac{b^2f^2\text{PolyLog}\left(2,-\frac{fh-ei}{i(e+fx)}\right)}{d(fh-ei)^3}+\frac{2b^2f^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{2b^2f^2}{}$$

```
[Out] (b*f*i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) + (a
 + b*Log[c*(e + f*x)])^2/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f*x)*(a
+ b*Log[c*(e + f*x)])^2)/(d*(f*h - e*i)^3*(h + i*x)) - (b^2*f^2*Log[h + i*x
])/(d*(f*h - e*i)^3) + (2*b*f^2*(a + b*Log[c*(e + f*x)])*Log[(f*(h + i*x))/
(f*h - e*i)])/(d*(f*h - e*i)^3) + (b*f^2*(a + b*Log[c*(e + f*x)])*Log[1 + (
f*h - e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^3) - (f^2*(a + b*Log[c*(e + f*x)]
)^2*Log[1 + (f*h - e*i)/(i*(e + f*x))])/(d*(f*h - e*i)^3) - (b^2*f^2*PolyLo
g[2, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i)^3) + (2*b*f^2*(a + b*Log
[c*(e + f*x)])*PolyLog[2, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i)^3)
+ (2*b^2*f^2*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)^3) +
(2*b^2*f^2*PolyLog[3, -((f*h - e*i)/(i*(e + f*x)))])/(d*(f*h - e*i)^3)
```

Rubi [A] time = 1.09201, antiderivative size = 453, normalized size of antiderivative = 0.93, number of steps used = 21, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {2411, 12, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391, 2319, 2301, 2314, 31}

$$-\frac{2bf^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)(a+b\log(c(e+fx)))}{d(fh-ei)^3}+\frac{3b^2f^2\text{PolyLog}\left(2,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{2b^2f^2\text{PolyLog}\left(3,-\frac{i(e+fx)}{fh-ei}\right)}{d(fh-ei)^3}+\frac{f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (b*f*i*(e + f*x)*(a + b*Log[c*(e + f*x)]))/(d*(f*h - e*i)^3*(h + i*x)) - (f
^2*(a + b*Log[c*(e + f*x)])^2)/(2*d*(f*h - e*i)^3) + (a + b*Log[c*(e + f*x)
])^2/(2*d*(f*h - e*i)*(h + i*x)^2) - (f*i*(e + f*x)*(a + b*Log[c*(e + f*x)]
)^2)/(d*(f*h - e*i)^3*(h + i*x)) + (f^2*(a + b*Log[c*(e + f*x)])^3)/(3*b*d*
(f*h - e*i)^3) - (b^2*f^2*Log[h + i*x])/(d*(f*h - e*i)^3) + (3*b*f^2*(a + b
*Log[c*(e + f*x)])*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^3) - (f^2
*(a + b*Log[c*(e + f*x)])^2*Log[(f*(h + i*x))/(f*h - e*i)])/(d*(f*h - e*i)^
3) + (3*b^2*f^2*PolyLog[2, -((i*(e + f*x))/(f*h - e*i))])/(d*(f*h - e*i)^3)
 - (2*b*f^2*(a + b*Log[c*(e + f*x)])*PolyLog[2, -((i*(e + f*x))/(f*h - e*i)
)])/(d*(f*h - e*i)^3) + (2*b^2*f^2*PolyLog[3, -((i*(e + f*x))/(f*h - e*i))]
)/(d*(f*h - e*i)^3)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] && !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^2}{(h+190x)^3(de+dfx)}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{dx\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx, x, e+fx\right)}{df}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{x\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^2}\,dx, x, e+fx\right)}{d(190e-fh)} + \frac{190\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^3}\,dx, x, e+fx\right.}{df(190e-fh)}$$

$$= -\frac{(a+b\log(c(e+fx)))^2}{2d(190e-fh)(h+190x)^2} - \frac{190\,\text{Subst}\left(\int \frac{(a+b\log(cx))^2}{\left(\frac{-190e+fh}{f}+\frac{190x}{f}\right)^2}\,dx, x, e+fx\right)}{d(190e-fh)^2} + \frac{f\,\text{Subst}\left(\right.}{}$$

$$= -\frac{(a+b\log(c(e+fx)))^2}{2d(190e-fh)(h+190x)^2} + \frac{190f(e+fx)(a+b\log(c(e+fx)))^2}{d(190e-fh)^3(h+190x)} + \frac{(190f)\,\text{Subst}\left(\int\right.}{d(}$$

$$= -\frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{2bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right)(a+b\log(c(e+fx)))}{d(190e-fh)^3} -$$

$$= \frac{b^2f^2\log(h+190x)}{d(190e-fh)^3} - \frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{3bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right)(a}{d(190e-f}$$

$$= \frac{b^2f^2\log(h+190x)}{d(190e-fh)^3} - \frac{190bf(e+fx)(a+b\log(c(e+fx)))}{d(190e-fh)^3(h+190x)} - \frac{3bf^2\log\left(-\frac{f(h+190x)}{190e-fh}\right)(a}{d(190e-f}$$

Mathematica [A] time = 0.885183, size = 680, normalized size = 1.4

$$6ab\left(-2f^2(h+ix)^2\left(\text{PolyLog}\left(2,\frac{i(e+fx)}{ei-fh}\right)+\log(c(e+fx))\log\left(\frac{f(h+ix)}{fh-ei}\right)\right)+f^2(h+ix)^2\log^2(c(e+fx))+(fh-ei)^2\log(c(e$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^2/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] (3*a^2*(f*h - e*i)^2 + 6*a^2*f*(f*h - e*i)*(h + i*x) + 6*a^2*f^2*(h + i*x)^
2*Log[e + f*x] - 6*a^2*f^2*(h + i*x)^2*Log[h + i*x] + 6*a*b*((f*h - e*i)^2*
Log[c*(e + f*x)] + f^2*(h + i*x)^2*Log[c*(e + f*x)]^2 - f*(h + i*x)*(f*h -
e*i + f*(h + i*x)*Log[e + f*x] - f*(h + i*x)*Log[h + i*x]) - 2*f*(h + i*x)*
(f*(h + i*x)*Log[e + f*x] + (-(f*h) + e*i)*Log[c*(e + f*x)] - f*(h + i*x)*L
og[h + i*x]) - 2*f^2*(h + i*x)^2*(Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h -
 e*i)] + PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)])) + b^2*(6*f^2*(h + i*x)^
2*Log[e + f*x] - 6*f*(f*h - e*i)*(h + i*x)*Log[c*(e + f*x)] + 3*(f*h - e*i)
^2*Log[c*(e + f*x)]^2 - 3*f^2*(h + i*x)^2*Log[c*(e + f*x)]^2 + 2*f^2*(h + i
*x)^2*Log[c*(e + f*x)]^3 - 6*f^2*(h + i*x)^2*Log[h + i*x] + 6*f^2*(h + i*x)
^2*Log[c*(e + f*x)]*Log[(f*(h + i*x))/(f*h - e*i)] + 6*f^2*(h + i*x)^2*Poly
Log[2, (i*(e + f*x))/(-(f*h) + e*i)] - 6*f*(h + i*x)*(Log[c*(e + f*x)]*(i*(
e + f*x)*Log[c*(e + f*x)] - 2*f*(h + i*x)*Log[(f*(h + i*x))/(f*h - e*i)]) -
 2*f*(h + i*x)*PolyLog[2, (i*(e + f*x))/(-(f*h) + e*i)]) - 6*f^2*(h + i*x)^
2*(Log[c*(e + f*x)]^2*Log[(f*(h + i*x))/(f*h - e*i)] + 2*Log[c*(e + f*x)]*P
olyLog[2, (i*(e + f*x))/(-(f*h) + e*i)] - 2*PolyLog[3, (i*(e + f*x))/(-(f*h
) + e*i)])))/(6*d*(f*h - e*i)^3*(h + i*x)^2)
```

Maple [F] time = 2.142, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^2}{\left(dfx+de\right)\left(ix+h\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x)
```

Maxima [B] time = 2.04545, size = 1716, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima
")
```

```
[Out] 1/2*(2*f^2*log(f*x + e)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^2 - d*
e^3*i^3) - 2*f^2*log(i*x + h)/(d*f^3*h^3 - 3*d*e*f^2*h^2*i + 3*d*e^2*f*h*i^
2 - d*e^3*i^3) + (2*f*i*x + 3*f*h - e*i)/(d*f^2*h^4 - 2*d*e*f*h^3*i + d*e^2
*h^2*i^2 + (d*f^2*h^2*i^2 - 2*d*e*f*h*i^3 + d*e^2*i^4)*x^2 + 2*(d*f^2*h^3*i
 - 2*d*e*f*h^2*i^2 + d*e^2*h*i^3)*x))*a^2 - (log(f*x + e)^2*log((f*i*x + e*
```

```
i)/(f*h - e*i) + 1) + 2*dilog(-(f*i*x + e*i)/(f*h - e*i))*log(f*x + e) - 2*
polylog(3, -(f*i*x + e*i)/(f*h - e*i)))*b^2*f^2/((f^3*h^3 - 3*e*f^2*h^2*i +
 3*e^2*f*h*i^2 - e^3*i^3)*d) + 1/6*(2*(b^2*f^2*i^2*x^2 + 2*b^2*f^2*h*i*x +
b^2*f^2*h^2)*log(f*x + e)^3 - 6*(f^2*h^2 - e*f*h*i - (3*f^2*h^2 - 4*e*f*h*i
 + e^2*i^2)*log(c))*a*b + 3*((3*f^2*h^2 - 4*e*f*h*i + e^2*i^2)*log(c)^2 - 2
*(f^2*h^2 - e*f*h*i)*log(c))*b^2 + 3*(2*a*b*f^2*h^2 + (2*f^2*h^2*log(c) - 4
*e*f*h*i + e^2*i^2)*b^2 + (2*a*b*f^2*i^2 + (2*f^2*i^2*log(c) - 3*f^2*i^2)*b
^2)*x^2 + 2*(2*a*b*f^2*h*i + (2*f^2*h*i*log(c) - 2*f^2*h*i - e*f*i^2)*b^2)*
x)*log(f*x + e)^2 - 6*((f^2*h*i - e*f*i^2 - 2*(f^2*h*i - e*f*i^2)*log(c))*a
*b - ((f^2*h*i - e*f*i^2)*log(c)^2 - (f^2*h*i - e*f*i^2)*log(c))*b^2)*x + 6
*((2*f^2*h^2*log(c) - 4*e*f*h*i + e^2*i^2)*a*b + (f^2*h^2*log(c)^2 + e*f*h*
i - (4*e*f*h*i - e^2*i^2)*log(c))*b^2 + ((2*f^2*i^2*log(c) - 3*f^2*i^2)*a*b
 + (f^2*i^2*log(c)^2 - 3*f^2*i^2*log(c) + f^2*i^2)*b^2)*x^2 + (2*(2*f^2*h*i
*log(c) - 2*f^2*h*i - e*f*i^2)*a*b + (2*f^2*h*i*log(c)^2 + f^2*h*i + e*f*i^
2 - 2*(2*f^2*h*i + e*f*i^2)*log(c))*b^2)*x)*log(f*x + e))/((f^3*h^3*i^2 - 3
*e*f^2*h^2*i^3 + 3*e^2*f*h*i^4 - e^3*i^5)*d*x^2 + 2*(f^3*h^4*i - 3*e*f^2*h^
3*i^2 + 3*e^2*f*h^2*i^3 - e^3*h*i^4)*d*x + (f^3*h^5 - 3*e*f^2*h^4*i + 3*e^2
*f*h^3*i^2 - e^3*h^2*i^3)*d) - (2*a*b*f^2 + (2*f^2*log(c) - 3*f^2)*b^2)*(lo
g(f*x + e)*log((f*i*x + e*i)/(f*h - e*i) + 1) + dilog(-(f*i*x + e*i)/(f*h -
 e*i)))/((f^3*h^3 - 3*e*f^2*h^2*i + 3*e^2*f*h*i^2 - e^3*i^3)*d) - ((2*f^2*l
og(c) - 3*f^2)*a*b + (f^2*log(c)^2 - 3*f^2*log(c) + f^2)*b^2)*log(i*x + h)/
((f^3*h^3 - 3*e*f^2*h^2*i + 3*e^2*f*h*i^2 - e^3*i^3)*d)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left(cfx+ce\right)^2+2\,ab\log\left(cfx+ce\right)+a^2}{dfi^3x^4+deh^3+\left(3\,dfhi^2+dei^3\right)x^3+3\left(dfh^2i+dehi^2\right)x^2+\left(dfh^3+3\,deh^2i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas
")
```

```
[Out] integral((b^2*log(c*f*x + c*e)^2 + 2*a*b*log(c*f*x + c*e) + a^2)/(d*f*i^3*x
^4 + d*e*h^3 + (3*d*f*h*i^2 + d*e*i^3)*x^3 + 3*(d*f*h^2*i + d*e*h*i^2)*x^2
+ (d*f*h^3 + 3*d*e*h^2*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**2/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^2}{\left(dfx+de\right)\left(ix+h\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^2/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^2/((d*f*x + d*e)*(i*x + h)^3), x)
```

3.191 $\int \frac{(h+ix)^4}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=230

$$\frac{4i^3e^{-\frac{3a}{b}}(fh-ei)\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^5}+\frac{6i^2e^{-\frac{2a}{b}}(fh-ei)^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^5}+\frac{i^4e^{-\frac{4a}{b}}\text{Ei}\left(\frac{4(a+b\log(c(e+fx)))}{b}\right)}{bc^4df^5}+\frac{4ie^{-\frac{a}{b}}(f$$

```
[Out] (4*i*(f*h - e*i)^3*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^5) + (6*i^2*(f*h - e*i)^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b]
)/(b*c^2*d*E^((2*a)/b)*f^5) + (4*i^3*(f*h - e*i)*ExpIntegralEi[(3*(a + b*Lo
g[c*(e + f*x)]))/b])/(b*c^3*d*E^((3*a)/b)*f^5) + (i^4*ExpIntegralEi[(4*(a +
 b*Log[c*(e + f*x)]))/b])/(b*c^4*d*E^((4*a)/b)*f^5) + ((f*h - e*i)^4*Log[a
+ b*Log[c*(e + f*x)]])/(b*d*f^5)
```

Rubi [A] time = 0.668064, antiderivative size = 230, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29, 2309}

$$\frac{4i^3e^{-\frac{3a}{b}}(fh-ei)\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^5}+\frac{6i^2e^{-\frac{2a}{b}}(fh-ei)^2\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^5}+\frac{i^4e^{-\frac{4a}{b}}\text{Ei}\left(\frac{4(a+b\log(c(e+fx)))}{b}\right)}{bc^4df^5}+\frac{4ie^{-\frac{a}{b}}(f$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^4/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```


```
[Out] (4*i*(f*h - e*i)^3*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^5) + (6*i^2*(f*h - e*i)^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b]
)/(b*c^2*d*E^((2*a)/b)*f^5) + (4*i^3*(f*h - e*i)*ExpIntegralEi[(3*(a + b*Lo
g[c*(e + f*x)]))/b])/(b*c^3*d*E^((3*a)/b)*f^5) + (i^4*ExpIntegralEi[(4*(a +
 b*Log[c*(e + f*x)]))/b])/(b*c^4*d*E^((4*a)/b)*f^5) + ((f*h - e*i)^4*Log[a
+ b*Log[c*(e + f*x)]])/(b*d*f^5)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(h+191x)^4}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-191e+fh}{f}+\frac{191x}{f}\right)^4}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-191e+fh}{f}+\frac{191x}{f}\right)^4}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{764(191e-fh)^3}{f^4(a+b\log(cx))}+\frac{(191e-fh)^4}{f^4x(a+b\log(cx))}+\frac{218886(191e-fh)^2x}{f^4(a+b\log(cx))}-\frac{27871484(191e-fh)x^2}{f^4(a+b\log(cx))}\right.\right.}{df}$$

$$= \frac{1330863361\,\text{Subst}\left(\int \frac{x^3}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^5} - \frac{(27871484(191e-fh))\,\text{Subst}\left(\right.}{df^5}$$

$$= \frac{1330863361\,\text{Subst}\left(\int \frac{e^{4x}}{a+bx}\,dx, x, \log(c(e+fx))\right)}{c^4df^5} - \frac{(27871484(191e-fh))\,\text{Sub}}{c}$$

$$= -\frac{764e^{-\frac{a}{b}}(191e-fh)^3\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^5} + \frac{218886e^{-\frac{2a}{b}}(191e-fh)^2\text{Ei}\left(\frac{2(a+b\log(c}{b}\right.}{bc^2df^5}$$

Mathematica [A] time = 0.853165, size = 397, normalized size = 1.73

$$\frac{e^{-\frac{4a}{b}}\left(6c^4e^2f^2h^2i^2e^{\frac{4a}{b}}\log(a+b\log(c(e+fx)))-4c^4e^3fhi^3e^{\frac{4a}{b}}\log(a+b\log(c(e+fx)))+c^4e^4i^4e^{\frac{4a}{b}}\log(a+b\log(c(e+fx)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^4/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (4*c^3*E^((3*a)/b)*i*(f*h - e*i)^3*ExpIntegralEi[a/b + Log[c*(e + f*x)]] +
6*c^2*e*E^((2*a)/b)*i^3*(-2*f*h + e*i)*ExpIntegralEi[2*(a/b + Log[c*(e + f*
x)])] + 4*c*E^(a/b)*f*h*i^3*ExpIntegralEi[3*(a/b + Log[c*(e + f*x)])] - 4*c
*e*E^(a/b)*i^4*ExpIntegralEi[3*(a/b + Log[c*(e + f*x)])] + i^4*ExpIntegralE
i[4*(a/b + Log[c*(e + f*x)])] + 6*c^2*E^((2*a)/b)*f^2*h^2*i^2*ExpIntegralEi
[(2*(a + b*Log[c*(e + f*x)]))/b] - 4*c^4*e*E^((4*a)/b)*f^3*h^3*i*Log[a + b*
Log[c*(e + f*x)]] + 6*c^4*e^2*E^((4*a)/b)*f^2*h^2*i^2*Log[a + b*Log[c*(e +
f*x)]] - 4*c^4*e^3*E^((4*a)/b)*f*h*i^3*Log[a + b*Log[c*(e + f*x)]] + c^4*e^
4*E^((4*a)/b)*i^4*Log[a + b*Log[c*(e + f*x)]] + c^4*E^((4*a)/b)*f^4*h^4*Log
[f*(a + b*Log[c*(e + f*x)])])/(b*c^4*d*E^((4*a)/b)*f^5)
```

Maple [F] time = 0.761, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^4}{(dfx+de)\,(a+b\ln(c(fx+e)))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^4/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int((i*x+h)^4/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{h^4\log\left(\frac{b\log(fx+e)+b\log(c)+a}{b}\right)}{bdf}+\int \frac{i^4x^4+4\,hi^3x^3+6\,h^2i^2x^2+4\,h^3ix}{bde\log(c)+ade+(bdf\log(c)+adf)x+(bdfx+bde)\log(fx+e)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^4*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((i^4*x^4 + 4
*h*i^3*x^3 + 6*h^2*i^2*x^2 + 4*h^3*i*x)/(b*d*e*log(c) + a*d*e + (b*d*f*log(
c) + a*d*f)*x + (b*d*f*x + b*d*e)*log(f*x + e)), x)
```

Fricas [A] time = 1.70508, size = 851, normalized size = 3.7

$$\left(i^4\,\text{log\_integral}\left(\left(c^4f^4x^4+4\,c^4ef^3x^3+6\,c^4e^2f^2x^2+4\,c^4e^3fx+c^4e^4\right)e^{\left(\frac{4a}{b}\right)}\right)+\left(c^4f^4h^4-4\,c^4ef^3h^3i+6\,c^4e^2f^2h^2i^2-4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] (i^4*log_integral((c^4*f^4*x^4 + 4*c^4*e*f^3*x^3 + 6*c^4*e^2*f^2*x^2 + 4*c^
4*e^3*f*x + c^4*e^4)*e^(4*a/b)) + (c^4*f^4*h^4 - 4*c^4*e*f^3*h^3*i + 6*c^4*
e^2*f^2*h^2*i^2 - 4*c^4*e^3*f*h*i^3 + c^4*e^4*i^4)*e^(4*a/b)*log(b*log(c*f*
```

```
x + c*e) + a) + 4*(c*f*h*i^3 - c*e*i^4)*e^(a/b)*log_integral((c^3*f^3*x^3 +
 3*c^3*e*f^2*x^2 + 3*c^3*e^2*f*x + c^3*e^3)*e^(3*a/b)) + 6*(c^2*f^2*h^2*i^2
 - 2*c^2*e*f*h*i^3 + c^2*e^2*i^4)*e^(2*a/b)*log_integral((c^2*f^2*x^2 + 2*c
^2*e*f*x + c^2*e^2)*e^(2*a/b)) + 4*(c^3*f^3*h^3*i - 3*c^3*e*f^2*h^2*i^2 + 3
*c^3*e^2*f*h*i^3 - c^3*e^3*i^4)*e^(3*a/b)*log_integral((c*f*x + c*e)*e^(a/b
)))*e^(-4*a/b)/(b*c^4*d*f^5)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{h^4}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \int \frac{i^4x^4}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \int \frac{4hi^3x^3}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx + \cdots}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**4/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**4/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**4*x**4/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(4*h*i**3*x**3/(a*e + a*f*x + b*e*log(c*e + c*f
*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(6*h**2*i**2*x**2/(a*e + a*f*x
+ b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(4*h**3*i*x/
(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x))/d
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^4}{\left(dfx+de\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^4/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^4/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

3.192 $\int \frac{(h+ix)^3}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=177

$$\frac{3i^2e^{-\frac{2a}{b}}(fh-ei)\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^4}+\frac{i^3e^{-\frac{3a}{b}}\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^4}+\frac{3ie^{-\frac{a}{b}}(fh-ei)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}+\frac{(fh-ei)^3\text{lo}}{}$$

```
[Out] (3*i*(f*h - e*i)^2*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^4) + (3*i^2*(f*h - e*i)*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/
(b*c^2*d*E^((2*a)/b)*f^4) + (i^3*ExpIntegralEi[(3*(a + b*Log[c*(e + f*x)]))
/b])/(b*c^3*d*E^((3*a)/b)*f^4) + ((f*h - e*i)^3*Log[a + b*Log[c*(e + f*x)]]
)/(b*d*f^4)
```

Rubi [A] time = 0.484022, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29, 2309}

$$\frac{3i^2e^{-\frac{2a}{b}}(fh-ei)\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^4}+\frac{i^3e^{-\frac{3a}{b}}\text{Ei}\left(\frac{3(a+b\log(c(e+fx)))}{b}\right)}{bc^3df^4}+\frac{3ie^{-\frac{a}{b}}(fh-ei)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}+\frac{(fh-ei)^3\text{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^3/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (3*i*(f*h - e*i)^2*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b
)*f^4) + (3*i^2*(f*h - e*i)*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/
(b*c^2*d*E^((2*a)/b)*f^4) + (i^3*ExpIntegralEi[(3*(a + b*Log[c*(e + f*x)]))
/b])/(b*c^3*d*E^((3*a)/b)*f^4) + ((f*h - e*i)^3*Log[a + b*Log[c*(e + f*x)]]
)/(b*d*f^4)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
```

```
c, p}, x] && IntegerQ[1/n]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(h+192x)^3}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-192e+fh}{f}+\frac{192x}{f}\right)^3}{dx(a+b\log(cx))}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-192e+fh}{f}+\frac{192x}{f}\right)^3}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{576(192e-fh)^2}{f^3(a+b\log(cx))}-\frac{(192e-fh)^3}{f^3x(a+b\log(cx))}-\frac{110592(192e-fh)x}{f^3(a+b\log(cx))}+\frac{7077888x^2}{f^3(a+b\log(cx))}\right)dx,x,\right.}{df}$$

$$= \frac{7077888\,\text{Subst}\left(\int \frac{x^2}{a+b\log(cx)}\,dx,x,e+fx\right)}{df^4}-\frac{(110592(192e-fh))\,\text{Subst}\left(\int \frac{}{a+b}\right.}{df^4}$$

$$= \frac{7077888\,\text{Subst}\left(\int \frac{e^{3x}}{a+bx}\,dx,x,\log(c(e+fx))\right)}{c^3df^4}-\frac{(110592(192e-fh))\,\text{Subst}\left(\int\right.}{c^2df^4}$$

$$= \frac{576e^{-\frac{a}{b}}(192e-fh)^2\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^4}-\frac{110592e^{-\frac{2a}{b}}(192e-fh)\text{Ei}\left(\frac{2(a+b\log(c(e+}{b}\right.}{bc^2df^4}$$

Mathematica [A] time = 0.482417, size = 279, normalized size = 1.58

$$\frac{e^{-\frac{3a}{b}}\left(3c^3e^2fhi^2e^{\frac{3a}{b}}\log(a+b\log(c(e+fx)))+c^3\left(-e^3\right)i^3e^{\frac{3a}{b}}\log(a+b\log(c(e+fx)))+3c^2ie^{\frac{2a}{b}}(fh-ei)^2\text{Ei}\left(\frac{a}{b}+\log(c(e+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^3/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (3*c^2*E^((2*a)/b)*i*(f*h - e*i)^2*ExpIntegralEi[a/b + Log[c*(e + f*x)]] -
3*c*e*E^(a/b)*i^3*ExpIntegralEi[2*(a/b + Log[c*(e + f*x)])] + i^3*ExpIntegr
alEi[3*(a/b + Log[c*(e + f*x)])] + 3*c*E^(a/b)*f*h*i^2*ExpIntegralEi[(2*(a
+ b*Log[c*(e + f*x)]))/b] - 3*c^3*e*E^((3*a)/b)*f^2*h^2*i*Log[a + b*Log[c*(
e + f*x)]] + 3*c^3*e^2*E^((3*a)/b)*f*h*i^2*Log[a + b*Log[c*(e + f*x)]] - c^
3*e^3*E^((3*a)/b)*i^3*Log[a + b*Log[c*(e + f*x)]] + c^3*E^((3*a)/b)*f^3*h^3
*Log[f*(a + b*Log[c*(e + f*x)])])/(b*c^3*d*E^((3*a)/b)*f^4)
```

Maple [F] time = 0.721, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^3}{(dfx+de)\left(a+b\ln\left(c\left(fx+e\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int((i*x+h)^3/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{h^3\log\left(\frac{b\log(fx+e)+b\log(c)+a}{b}\right)}{bdf}+\int \frac{i^3x^3+3\,hi^2x^2+3\,h^2ix}{bde\log(c)+ade+\left(bdf\log(c)+adf\right)x+\left(bdfx+bde\right)\log\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^3*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((i^3*x^3 + 3
*h*i^2*x^2 + 3*h^2*i*x)/(b*d*e*log(c) + a*d*e + (b*d*f*log(c) + a*d*f)*x +
(b*d*f*x + b*d*e)*log(f*x + e)), x)
```

Fricas [A] time = 1.65964, size = 562, normalized size = 3.18

$$\frac{\left(i^3\,\text{log\_integral}\left(\left(c^3f^3x^3+3\,c^3ef^2x^2+3\,c^3e^2fx+c^3e^3\right)e^{\left(\frac{3a}{b}\right)}\right)+\left(c^3f^3h^3-3\,c^3ef^2h^2i+3\,c^3e^2fhi^2-c^3e^3i^3\right)e^{\left(\frac{3a}{b}\right)}\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] (i^3*log_integral((c^3*f^3*x^3 + 3*c^3*e*f^2*x^2 + 3*c^3*e^2*f*x + c^3*e^3)
*e^(3*a/b)) + (c^3*f^3*h^3 - 3*c^3*e*f^2*h^2*i + 3*c^3*e^2*f*h*i^2 - c^3*e^
3*i^3)*e^(3*a/b)*log(b*log(c*f*x + c*e) + a) + 3*(c*f*h*i^2 - c*e*i^3)*e^(a
/b)*log_integral((c^2*f^2*x^2 + 2*c^2*e*f*x + c^2*e^2)*e^(2*a/b)) + 3*(c^2*
f^2*h^2*i - 2*c^2*e*f*h*i^2 + c^2*e^2*i^3)*e^(2*a/b)*log_integral((c*f*x +
c*e)*e^(a/b)))*e^(-3*a/b)/(b*c^3*d*f^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{h^3}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx + \int \frac{i^3x^3}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx + \int \frac{3hi^2x^2}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx +}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**3/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**3*x**3/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(3*h*i**2*x**2/(a*e + a*f*x + b*e*log(c*e + c*f
*x) + b*f*x*log(c*e + c*f*x)), x) + Integral(3*h**2*i*x/(a*e + a*f*x + b*e*
log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)), x))/d
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^3}{(dfx+de)(b\log((fx+e)c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^3/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

3.193 $\int \frac{(h+ix)^2}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=124

$$\frac{i^2e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3}+\frac{(fh-ei)^2\log(a+b\log(c(e+fx)))}{bdf^3}$$

```
[Out] (2*i*(f*h - e*i)*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*
f^3) + (i^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/(b*c^2*d*E^((2*a
)/b)*f^3) + ((f*h - e*i)^2*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^3)
```

Rubi [A] time = 0.379346, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29, 2309}

$$\frac{i^2e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3}+\frac{(fh-ei)^2\log(a+b\log(c(e+fx)))}{bdf^3}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)^2/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```


```
[Out] (2*i*(f*h - e*i)*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*
f^3) + (i^2*ExpIntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b])/(b*c^2*d*E^((2*a
)/b)*f^3) + ((f*h - e*i)^2*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^3)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(h+193x)^2}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-193e+fh}{f}+\frac{193x}{f}\right)^2}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-193e+fh}{f}+\frac{193x}{f}\right)^2}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \left(-\frac{386(193e-fh)}{f^2(a+b\log(cx))}+\frac{(193e-fh)^2}{f^2x(a+b\log(cx))}+\frac{37249x}{f^2(a+b\log(cx))}\right)dx, x, e+fx\right)}{df}$$
$$= \frac{37249\,\text{Subst}\left(\int \frac{x}{a+b\log(cx)}\,dx, x, e+fx\right)}{df^3} - \frac{(386(193e-fh))\,\text{Subst}\left(\int \frac{1}{a+b\log(cx)}\right.}{df^3}$$
$$= \frac{37249\,\text{Subst}\left(\int \frac{e^{2x}}{a+bx}\,dx, x, \log(c(e+fx))\right)}{c^2df^3} - \frac{(386(193e-fh))\,\text{Subst}\left(\int \frac{e^x}{a+bx}\,d\right.}{cdf^3}$$
$$= -\frac{386e^{-\frac{a}{b}}(193e-fh)\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^3} + \frac{37249e^{-\frac{2a}{b}}\text{Ei}\left(\frac{2(a+b\log(c(e+fx)))}{b}\right)}{bc^2df^3} + \frac{(19}{}$$

Mathematica [A] time = 0.284923, size = 137, normalized size = 1.1

$$\frac{e^{-\frac{2a}{b}}\left(c^2e^{\frac{2a}{b}}\left(f^2h^2\log(f(a+b\log(c(e+fx))))+ei(ei-2fh)\log(a+b\log(c(e+fx)))\right)+2cie^{a/b}(fh-ei)\text{Ei}\left(\frac{a}{b}+\log(c(e+\right.\right.}{bc^2df^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)^2/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (2*c*E^(a/b)*i*(f*h - e*i)*ExpIntegralEi[a/b + Log[c*(e + f*x)]] + i^2*ExpI
ntegralEi[(2*(a + b*Log[c*(e + f*x)]))/b] + c^2*E^((2*a)/b)*(e*i*(-2*f*h +
e*i)*Log[a + b*Log[c*(e + f*x)]] + f^2*h^2*Log[f*(a + b*Log[c*(e + f*x)])])
```

```
)/(b*c^2*d*E^((2*a)/b)*f^3)
```

Maple [F] time = 0.738, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2}{(dfx+de)\,(a+b\ln(c(fx+e)))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int((i*x+h)^2/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{h^2\log\left(\frac{b\log(fx+e)+b\log(c)+a}{b}\right)}{bdf}+\int \frac{i^2x^2+2\,hix}{bde\log(c)+ade+(bdf\log(c)+adf)x+(bdfx+bde)\log(fx+e)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] h^2*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f) + integrate((i^2*x^2 + 2
*h*i*x)/(b*d*e*log(c) + a*d*e + (b*d*f*log(c) + a*d*f)*x + (b*d*f*x + b*d*e
)*log(f*x + e)), x)
```

Fricas [A] time = 1.55184, size = 332, normalized size = 2.68

$$\frac{\left(\left(c^2f^2h^2-2\,c^2efhi+c^2e^2i^2\right)e^{\left(\frac{2a}{b}\right)}\log\left(b\log\left(cfx+ce\right)+a\right)+i^2\,\mathrm{log\_integral}\left(\left(c^2f^2x^2+2\,c^2efx+c^2e^2\right)e^{\left(\frac{2a}{b}\right)}\right)+2\,(c\cdots}{bc^2df^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] ((c^2*f^2*h^2 - 2*c^2*e*f*h*i + c^2*e^2*i^2)*e^(2*a/b)*log(b*log(c*f*x + c*
e) + a) + i^2*log_integral((c^2*f^2*x^2 + 2*c^2*e*f*x + c^2*e^2)*e^(2*a/b))
 + 2*(c*f*h*i - c*e*i^2)*e^(a/b)*log_integral((c*f*x + c*e)*e^(a/b)))*e^(-2
*a/b)/(b*c^2*d*f^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{h^2}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx+\int \frac{i^2x^2}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,dx+\int \frac{2hix}{ae+afx+be\log(ce+cfx)+bfx\log(ce+cfx)}\,\cdots}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] (Integral(h**2/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)
), x) + Integral(i**2*x**2/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(
c*e + c*f*x)), x) + Integral(2*h*i*x/(a*e + a*f*x + b*e*log(c*e + c*f*x) +
b*f*x*log(c*e + c*f*x)), x))/d
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2}{(dfx+de)\left(b\log\left((fx+e)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

3.194 $\int \frac{h+ix}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=71

$$\frac{ie^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}+\frac{(fh-ei)\log(a+b\log(c(e+fx)))}{bdf^2}$$

```
[Out] (i*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*f^2) + ((f*h -
 e*i)*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^2)
```

Rubi [A] time = 0.21831, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2411, 12, 2353, 2299, 2178, 2302, 29}

$$\frac{ie^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}+\frac{(fh-ei)\log(a+b\log(c(e+fx)))}{bdf^2}$$

Antiderivative was successfully verified.

```
[In] Int[(h + i*x)/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (i*ExpIntegralEi[(a + b*Log[c*(e + f*x)])/b])/(b*c*d*E^(a/b)*f^2) + ((f*h -
 e*i)*Log[a + b*Log[c*(e + f*x)]])/(b*d*f^2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
```

```
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rubi steps

$$\begin{aligned}\int \frac{h+194x}{(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \frac{\text{Subst}\left(\int \frac{\frac{-194e+fh}{f}+\frac{194x}{f}}{dx(a+b\log(cx))}\,dx,x,e+fx\right)}{f}\\ &= \frac{\text{Subst}\left(\int \frac{\frac{-194e+fh}{f}+\frac{194x}{f}}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{df}\\ &= \frac{\text{Subst}\left(\int \left(\frac{194}{f(a+b\log(cx))}+\frac{-194e+fh}{fx(a+b\log(cx))}\right)dx,x,e+fx\right)}{df}\\ &= \frac{194\,\text{Subst}\left(\int \frac{1}{a+b\log(cx)}\,dx,x,e+fx\right)}{df^2}-\frac{(194e-fh)\,\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,\right.}{df^2}\\ &= \frac{194\,\text{Subst}\left(\int \frac{e^x}{a+bx}\,dx,x,\log(c(e+fx))\right)}{cdf^2}-\frac{(194e-fh)\,\text{Subst}\left(\int \frac{1}{x}\,dx,x,a+b\,\mathrm{l}\right.}{bdf^2}\\ &= \frac{194e^{-\frac{a}{b}}\text{Ei}\left(\frac{a+b\log(c(e+fx))}{b}\right)}{bcdf^2}-\frac{(194e-fh)\log(a+b\log(c(e+fx)))}{bdf^2}\end{aligned}$$

Mathematica [A] time = 0.14342, size = 76, normalized size = 1.07

$$\frac{ie^{-\frac{a}{b}}\text{Ei}\left(\frac{a}{b}+\log(c(e+fx))\right)+cfh\log(f(a+b\log(c(e+fx))))-cei\log(a+b\log(c(e+fx)))}{bcdf^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(h + i*x)/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] ((i*ExpIntegralEi[a/b + Log[c*(e + f*x)]])/E^(a/b) - c*e*i*Log[a + b*Log[c*
(e + f*x)]] + c*f*h*Log[f*(a + b*Log[c*(e + f*x)])])/(b*c*d*f^2)
```

Maple [F] time = 0.529, size = 0, normalized size = 0.

$$\int \frac{ix+h}{\left(dfx+de\right)\left(a+b\ln\left(c\left(fx+e\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)

[Out] int((i*x+h)/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$i\int \frac{x}{bde\log\left(c\right)+ade+\left(bdf\log\left(c\right)+adf\right)x+\left(bdfx+bde\right)\log\left(fx+e\right)}\,dx+\frac{h\log\left(\frac{b\log\left(fx+e\right)+b\log\left(c\right)+a}{b}\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")

[Out] i*integrate(x/(b*d*e*log(c) + a*d*e + (b*d*f*log(c) + a*d*f)*x + (b*d*f*x +
 b*d*e)*log(f*x + e)), x) + h*log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f
)
```

Fricas [A] time = 1.68376, size = 157, normalized size = 2.21

$$\frac{\left(\left(cfh-cei\right)e^{\frac{a}{b}}\log\left(b\log\left(cfx+ce\right)+a\right)+i\,\mathrm{log\_integral}\left(\left(cfx+ce\right)e^{\frac{a}{b}}\right)\right)e^{\left(-\frac{a}{b}\right)}}{bcdf^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")

[Out] ((c*f*h - c*e*i)*e^(a/b)*log(b*log(c*f*x + c*e) + a) + i*log_integral((c*f*
x + c*e)*e^(a/b)))*e^(-a/b)/(b*c*d*f^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{h}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx+\int \frac{ix}{ae+afx+be\log\left(ce+cfx\right)+bfx\log\left(ce+cfx\right)}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)

[Out] (Integral(h/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f*x)),
x) + Integral(i*x/(a*e + a*f*x + b*e*log(c*e + c*f*x) + b*f*x*log(c*e + c*f
*x)), x))/d
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{ix+h}{\left(dfx+de\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)/((d*f*x + d*e)*(b*log((f*x + e)*c) + a)), x)
```

3.195 $\int \frac{1}{(de+dfx)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=23

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

Rubi [A] time = 0.0663648, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {2390, 12, 2302, 29}

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rubi steps

$$\int \frac{1}{(de+dfx)(a+b\log(c(e+fx)))}\,dx = \frac{\text{Subst}\left(\int \frac{1}{dx(a+b\log(cx))}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{x}\,dx, x, a+b\log(c(e+fx))\right)}{bdf}$$
$$= \frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Mathematica [A] time = 0.0174128, size = 23, normalized size = 1.

$$\frac{\log(a+b\log(c(e+fx)))}{bdf}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*e + d*f*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*f)
```

Maple [A] time = 0.066, size = 25, normalized size = 1.1

$$\frac{\ln\left(a+b\ln\left(cfx+ce\right)\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] 1/f/d*ln(a+b*ln(c*f*x+c*e))/b
```

Maxima [A] time = 1.18346, size = 39, normalized size = 1.7

$$\frac{\log\left(\frac{b\log\left(fx+e\right)+b\log(c)+a}{b}\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] log((b*log(f*x + e) + b*log(c) + a)/b)/(b*d*f)
```

Fricas [A] time = 1.65417, size = 50, normalized size = 2.17

$$\frac{\log\left(b\log\left(cfx+ce\right)+a\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] log(b*log(c*f*x + c*e) + a)/(b*d*f)
```

Sympy [A] time = 0.214731, size = 17, normalized size = 0.74

$$\frac{\log\left(\frac{a}{b}+\log\left(c\left(e+fx\right)\right)\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] log(a/b + log(c*(e + f*x)))/(b*d*f)
```

Giac [B] time = 1.23041, size = 113, normalized size = 4.91

$$\frac{\log\left(\frac{1}{4}\left(\pi\left(\operatorname{sgn}\left(fx+e\right)-1\right)+\pi(\operatorname{sgn}(c)-1)+4\pi\left\lfloor-\frac{\pi\left(\operatorname{sgn}\left(fx+e\right)-1\right)+\pi(\operatorname{sgn}(c)-1)}{4\pi}+\frac{1}{2}\right\rfloor\right)^2b^2+\left(b\log\left(\left|fx+e\right||c|\right)+a\right)^2\right)}{2\,bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] 1/2*log(1/4*(pi*(sgn(f*x + e) - 1) + pi*(sgn(c) - 1) + 4*pi*floor(-1/4*(pi*
(sgn(f*x + e) - 1) + pi*(sgn(c) - 1))/pi + 1/2))^2*b^2 + (b*log(abs(f*x + e
)*abs(c)) + a)^2)/(b*d*f)
```

3.196 $\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=71

$$\frac{\log(a+b\log(c(e+fx)))}{bd(fh-ei)}-\frac{i\text{Unintegrable}\left(\frac{1}{(h+ix)(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)}$$

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*(f*h - e*i)) - (i*Unintegrable[1/((h + i*x
)*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i))
```

Rubi [A] time = 0.240587, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Log[a + b*Log[c*(e + f*x)]]/(b*d*(f*h - e*i)) - (i*Defer[Int][1/((h + i*x)*
(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i))
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(h+196x)(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \int \left(\frac{196}{d(196e-fh)(h+196x)(a+b\log(c(e+fx)))}-\frac{}{d(196e-fh)(e+}\right.\\
&= \frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}-\frac{f\int \frac{1}{(e+fx)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}\\
&= -\frac{\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{d(196e-fh)}+\frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}}{d(196e-fh)}\\
&= \frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}-\frac{\text{Subst}\left(\int \frac{1}{x}\,dx,x,a+b\log(c(e+f\right.}{bd(196e-fh)}\\
&= -\frac{\log(a+b\log(c(e+fx)))}{bd(196e-fh)}+\frac{196\int \frac{1}{(h+196x)(a+b\log(c(e+fx)))}\,dx}{d(196e-fh)}
\end{aligned}$$

Mathematica [A] time = 0.389748, size = 0, normalized size = 0.

$$\int \frac{1}{(de+dfx)(h+ix)(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Integrate[1/((d*e + d*f*x)*(h + i*x)*(a + b*Log[c*(e + f*x)])), x]
```

Maple [A] time = 0.946, size = 0, normalized size = 0.

$$\int \frac{1}{\left(dfx+de\right)\left(ix+h\right)\left(a+b\ln\left(c\left(fx+e\right)\right)\right)}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(dfx+de\right)\left(ix+h\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)*(b*log((f*x + e)*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{adfix^2+adeh+\left(adfh+adei\right)x+\left(bdfix^2+bdeh+\left(bdfh+bdei\right)x\right)\log\left(cfx+ce\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d*f*i*x^2 + a*d*e*h + (a*d*f*h + a*d*e*i)*x + (b*d*f*i*x^2 +
b*d*e*h + (b*d*f*h + b*d*e*i)*x)*log(c*f*x + c*e)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(dfx+de\right)\left(ix+h\right)\left(b\log\left(\left(fx+e\right)c\right)+a\right)}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)*(b*log((f*x + e)*c) + a)), x)
```

3.197 $\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$

Optimal. Leaf size=113

$$-\frac{i\text{Unintegrable}\left(\frac{1}{(h+ix)^2(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)}-\frac{fi\text{Unintegrable}\left(\frac{1}{(h+ix)(a+b\log(c(e+fx)))},x\right)}{d(fh-ei)^2}+\frac{f\log(a+b\log(c(e+fx)))}{bd(fh-ei)^2}$$

```
[Out] (f*Log[a + b*Log[c*(e + f*x)]])/(b*d*(f*h - e*i)^2) - (i*Unintegrable[1/((h
 + i*x)^2*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)) - (f*i*Unintegrabl
e[1/((h + i*x)*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)^2)
```

Rubi [A] time = 0.294842, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] (f*Log[a + b*Log[c*(e + f*x)]])/(b*d*(f*h - e*i)^2) - (i*Defer[Int][1/((h +
 i*x)^2*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)) - (f*i*Defer[Int][1/
((h + i*x)*(a + b*Log[c*(e + f*x)])), x])/(d*(f*h - e*i)^2)
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(h+197x)^2(de+dfx)(a+b\log(c(e+fx)))}\,dx &= \int \left(\frac{197}{d(197e-fh)(h+197x)^2(a+b\log(c(e+fx)))}-\frac{}{d(197e-fh}\right.\\
&= -\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}+\frac{f^2\int \frac{1}{(e+fx)(a+b\log(c(e+fx)))}\,d}{d(197e-fh)^2}\\
&= \frac{f\,\text{Subst}\left(\int \frac{1}{x(a+b\log(cx))}\,dx,x,e+fx\right)}{d(197e-fh)^2}-\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c}}{d(197e-fh)^2}\\
&= -\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}+\frac{f\,\text{Subst}\left(\int \frac{1}{x}\,dx,x,a+b\,\mathrm{l}\right.}{bd(197e-fh}\\
&= \frac{f\log(a+b\log(c(e+fx)))}{bd(197e-fh)^2}-\frac{(197f)\int \frac{1}{(h+197x)(a+b\log(c(e+fx)))}\,dx}{d(197e-fh)^2}
\end{aligned}$$

Mathematica [A] time = 4.01106, size = 0, normalized size = 0.

$$\int \frac{1}{(de+dfx)(h+ix)^2(a+b\log(c(e+fx)))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])),x]
```

```
[Out] Integrate[1/((d*e + d*f*x)*(h + i*x)^2*(a + b*Log[c*(e + f*x)])), x]
```

Maple [A] time = 0.918, size = 0, normalized size = 0.

$$\int \frac{1}{\left(dfx+de\right)\left(ix+h\right)^{2}\left(a+b\ln\left(c\left(fx+e\right)\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] int(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*ln(c*(f*x+e))),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(dfx+de\right)\left(ix+h\right)^{2}\left(b\log\left(\left(fx+e\right)c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="maxima
")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)^2*(b*log((f*x + e)*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{adfi^{2}x^{3}+adeh^{2}+\left(2\,adfhi+adei^{2}\right)x^{2}+\left(adfh^{2}+2\,adehi\right)x+\left(bdfi^{2}x^{3}+bdeh^{2}+\left(2\,bdfhi+bdei^{2}\right)x^{2}+\left(bdf\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="fricas
")
```

```
[Out] integral(1/(a*d*f*i^2*x^3 + a*d*e*h^2 + (2*a*d*f*h*i + a*d*e*i^2)*x^2 + (a*
d*f*h^2 + 2*a*d*e*h*i)*x + (b*d*f*i^2*x^3 + b*d*e*h^2 + (2*b*d*f*h*i + b*d*
e*i^2)*x^2 + (b*d*f*h^2 + 2*b*d*e*h*i)*x)*log(c*f*x + c*e)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)**2/(a+b*ln(c*(f*x+e))),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(dfx+de)(ix+h)^2(b\log((fx+e)c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*f*x+d*e)/(i*x+h)^2/(a+b*log(c*(f*x+e))),x, algorithm="giac")
```

```
[Out] integrate(1/((d*f*x + d*e)*(i*x + h)^2*(b*log((f*x + e)*c) + a)), x)
```

3.198 $\int \frac{(f+gx)^{5/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=485

$$-\frac{2bn(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{7/2}}+\frac{2\sqrt{f+gx}(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}+\frac{2(f+gx)^{3/2}(ef-dg)\left(a+b\right.}{3e^2}$$

```
[Out] (-92*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(15*e^3) - (32*b*(e*f - d*g)*n*(f + g
*x)^(3/2))/(45*e^2) - (4*b*n*(f + g*x)^(5/2))/(25*e) + (92*b*(e*f - d*g)^(5
/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*e^(7/2)) + (2*b
*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^
(7/2) + (2*(e*f - d*g)^2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/e^3 + (2
*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e^2) + (2*(f +
g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*e) - (2*(e*f - d*g)^(5/2)*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(7/
2) - (4*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*
g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(7/2) - (2*b*(e
*f - d*g)^(5/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/e^(7/2)
```

Rubi [A] time = 2.04509, antiderivative size = 485, normalized size of antiderivative = 1., number of steps used = 27, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2bn(ef-dg)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{7/2}}+\frac{2\sqrt{f+gx}(ef-dg)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^3}+\frac{2(f+gx)^{3/2}(ef-dg)\left(a+b\right.}{3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```


```
[Out] (-92*b*(e*f - d*g)^2*n*Sqrt[f + g*x])/(15*e^3) - (32*b*(e*f - d*g)*n*(f + g
*x)^(3/2))/(45*e^2) - (4*b*n*(f + g*x)^(5/2))/(25*e) + (92*b*(e*f - d*g)^(5
/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(15*e^(7/2)) + (2*b
*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^
(7/2) + (2*(e*f - d*g)^2*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/e^3 + (2
*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e^2) + (2*(f +
g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(5*e) - (2*(e*f - d*g)^(5/2)*ArcTanh
[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(7/
2) - (4*b*(e*f - d*g)^(5/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*
g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(7/2) - (2*b*(e
*f - d*g)^(5/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])])/e^(7/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}(a+b\log(cx^n))}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}(a+b\log(cx^n))\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Sub}}{}$$

$$= \frac{2(f+gx)^{5/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{5e} + \frac{(g(ef-dg))\,\text{Subst}\left(\int \sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\right.}{e^3}$$

$$= -\frac{4bn(f+gx)^{5/2}}{25e} + \frac{2(ef-dg)(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^2} + \frac{2(f+g}{}$$

$$= -\frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} + \frac{2(ef-dg)^2\sqrt{f+gx}\,(a+b}{e^3}$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

$$= -\frac{92b(ef-dg)^2n\sqrt{f+gx}}{15e^3} - \frac{32b(ef-dg)n(f+gx)^{3/2}}{45e^2} - \frac{4bn(f+gx)^{5/2}}{25e} +$$

Mathematica [A] time = 1.09493, size = 818, normalized size = 1.69

$$\frac{450 (a + b\log(c(d + ex)^n))\log\left(\sqrt{ef - dg} - \sqrt{e}\sqrt{f + gx}\right)(ef - dg)^{5/2} - 450 (a + b\log(c(d + ex)^n))\log\left(\sqrt{ef - dg} + \sqrt{e}\sqrt{\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (900*a*Sqrt[e]*(e*f - d*g)^2*Sqrt[f + g*x] - 1800*b*(e*f - d*g)^2*n*(Sqrt[e
]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f
- d*g]]) - 200*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x]*(4*e*f - 3*d*g + e*g*
x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])
- 24*b*n*(3*e^(5/2)*(f + g*x)^(5/2) + 5*(e*f - d*g)*(Sqrt[e]*Sqrt[f + g*x]*
(4*e*f - 3*d*g + e*g*x) - 3*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x
])/Sqrt[e*f - d*g]])) + 900*b*Sqrt[e]*(e*f - d*g)^2*Sqrt[f + g*x]*Log[c*(d
+ e*x)^n] + 300*e^(3/2)*(e*f - d*g)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^
n]) + 180*e^(5/2)*(f + g*x)^(5/2)*(a + b*Log[c*(d + e*x)^n]) + 450*(e*f - d
*g)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f +
 g*x]] - 450*(e*f - d*g)^(5/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*
g] + Sqrt[e]*Sqrt[f + g*x]] - 225*b*(e*f - d*g)^(5/2)*n*(Log[Sqrt[e*f - d*g
] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] +
2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2
- (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 225*b*(e*f - d*g)^(5/2)*n
*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[
e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])
]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]))/(450*e
^(7/2))
```

Maple [F] time = 1.205, size = 0, normalized size = 0.

$$\int \frac{a + b\ln\left(c\left(ex + d\right)^n\right)}{ex + d}\left(gx + f\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

```
[Out] int((g*x+f)^(5/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(bg^2x^2 + 2\,bfgx + bf^2\right)\sqrt{gx+f}\log\left((ex+d)^n c\right) + \left(ag^2x^2 + 2\,afgx + af^2\right)\sqrt{gx+f}}{ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral(((b*g^2*x^2 + 2*b*f*g*x + b*f^2)*sqrt(g*x + f)*log((e*x + d)^n*c)
+ (a*g^2*x^2 + 2*a*f*g*x + a*f^2)*sqrt(g*x + f))/(e*x + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(5/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^{\frac{5}{2}}\left(b\log\left((ex+d)^n c\right) + a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(5/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(5/2)*(b*log((e*x + d)^n*c) + a)/(e*x + d), x)
```

3.199 $\int \frac{(f+gx)^{3/2}(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=417

$$-\frac{2bn(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{5/2}}+\frac{2\sqrt{f+gx}(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}-\frac{2(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+}}{\sqrt{ef-}}\right.}{e^{5/}}$$

```
[Out] (-16*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e^2) - (4*b*n*(f + g*x)^(3/2))/(9*e)
 + (16*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(3*e^(5/2)) + (2*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/
Sqrt[e*f - d*g]]^2)/e^(5/2) + (2*(e*f - d*g)*Sqrt[f + g*x]*(a + b*Log[c*(d
+ e*x)^n]))/e^2 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e) - (2
*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/e^(5/2) - (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/e^(5/2) - (2*b*(e*f - d*g)^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(5/2)
```

Rubi [A] time = 1.37762, antiderivative size = 417, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2bn(ef-dg)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{5/2}}+\frac{2\sqrt{f+gx}(ef-dg)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}-\frac{2(ef-dg)^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+}}{\sqrt{ef-}}\right.}{e^{5/}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```


```
[Out] (-16*b*(e*f - d*g)*n*Sqrt[f + g*x])/(3*e^2) - (4*b*n*(f + g*x)^(3/2))/(9*e)
 + (16*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]])/(3*e^(5/2)) + (2*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/
Sqrt[e*f - d*g]]^2)/e^(5/2) + (2*(e*f - d*g)*Sqrt[f + g*x]*(a + b*Log[c*(d
+ e*x)^n]))/e^2 + (2*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(3*e) - (2
*(e*f - d*g)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/e^(5/2) - (4*b*(e*f - d*g)^(3/2)*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/e^(5/2) - (2*b*(e*f - d*g)^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(5/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
```

```
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}(a+b\log(cx^n))}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}\,(a+b\log(cx^n))\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst} \cdots}{}$$

$$= \frac{2(f+gx)^{3/2}\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e} + \frac{(g(ef-dg))\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx \cdots\right.}{e^3}$$

$$= -\frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx}\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2} + \frac{2(f+gx) \cdots}{}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx}\,(a+b\log \cdots}{e^2}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{2(ef-dg)\sqrt{f+gx}\,(a+b\log \cdots}{e^2}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e} \cdots}{\sqrt{e} \cdots}\right.}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e} \cdots}{\sqrt{e} \cdots}\right.}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e} \cdots}{\sqrt{e} \cdots}\right.}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e} \cdots}{\sqrt{e} \cdots}\right.}{3e^{5/2}}$$

$$= -\frac{16b(ef-dg)n\sqrt{f+gx}}{3e^2} - \frac{4bn(f+gx)^{3/2}}{9e} + \frac{16b(ef-dg)^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e} \cdots}{\sqrt{e} \cdots}\right.}{3e^{5/2}}$$

Mathematica [A] time = 0.973117, size = 607, normalized size = 1.46

$$\frac{-9bn(ef-dg)^{3/2}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log \cdots\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (36*a*Sqrt[e]*(e*f - d*g)*Sqrt[f + g*x] - 8*b*e^(3/2)*n*(f + g*x)^(3/2) - 9
6*b*(e*f - d*g)*n*(Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) + 36*b*Sqrt[e]*(e*f - d*g)*Sqrt[f + g*x]*
Log[c*(d + e*x)^n] + 12*e^(3/2)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])
+ 18*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqr
t[e]*Sqrt[f + g*x]] - 18*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[S
qrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - 9*b*(e*f - d*g)^(3/2)*n*(Log[Sqrt
[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f
+ g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyL
og[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 9*b*(e*f - d*g)
^(3/2)*n*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g]
 + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f
 - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2])
)/(18*e^(5/2))
```

Maple [F] time = 1.135, size = 0, normalized size = 0.

$$\int \frac{a + b \ln \left(c \left(ex + d\right)^{n}\right)}{ex + d} \left(gx + f\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

```
[Out] int((g*x+f)^(3/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(bgx + bf\right)\sqrt{gx + f}\log\left(\left(ex + d\right)^{n} c\right) + \left(agx + af\right)\sqrt{gx + f}}{ex + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral(((b*g*x + b*f)*sqrt(g*x + f)*log((e*x + d)^n*c) + (a*g*x + a*f)*sq
rt(g*x + f))/(e*x + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(3/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^{\frac{3}{2}}\left(b\log\left((ex+d)^{n}c\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(3/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((g*x + f)^(3/2)*(b*log((e*x + d)^n*c) + a)/(e*x + d), x)
```

3.200 $\int \frac{\sqrt{f+gx}(a+b\log(c(d+ex)^n))}{d+ex}\,dx$

Optimal. Leaf size=349

$$-\frac{2bn\sqrt{ef-dg}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{3/2}}-\frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{e^{3/2}}+\frac{2\sqrt{f+gx}(a+b\log}{e}$$

```
[Out] (-4*b*n*Sqrt[f + g*x])/e + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/e^(3/2) + (2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^(3/2) + (2*Sqrt[f + g*x]*(a + b*Log[c*
(d + e*x)^n]))/e - (2*Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(3/2) - (4*b*Sqrt[e*f - d*g]*n*Ar
cTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g])])/e^(3/2) - (2*b*Sqrt[e*f - d*g]*n*PolyLog[2, 1 - 2
/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(3/2)
```

Rubi [A] time = 0.985901, antiderivative size = 349, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2bn\sqrt{ef-dg}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{e^{3/2}}-\frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{e^{3/2}}+\frac{2\sqrt{f+gx}(a+b\log}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```


```
[Out] (-4*b*n*Sqrt[f + g*x])/e + (4*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g]])/e^(3/2) + (2*b*Sqrt[e*f - d*g]*n*ArcTanh[(Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/e^(3/2) + (2*Sqrt[f + g*x]*(a + b*Log[c*
(d + e*x)^n]))/e - (2*Sqrt[e*f - d*g]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[
e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/e^(3/2) - (4*b*Sqrt[e*f - d*g]*n*Ar
cTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f +
 g*x])/Sqrt[e*f - d*g])])/e^(3/2) - (2*b*Sqrt[e*f - d*g]*n*PolyLog[2, 1 - 2
/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/e^(3/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}(a+b\log(cx^n))}{x}\,dx, x, d+ex\right)}{e}$$

$$= \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e^2} + \frac{(ef-dg)\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d$$

$$= \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e} - \frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log($$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e} - \frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{e}}\right.}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d+ex)^n))}{e} - \frac{2\sqrt{ef-dg}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{e}}\right.}{}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2\sqrt{f+gx}\,(a+b\log(c(d}{e}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tanh^{-1}\left(\right.}{e^{3/2}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tanh^{-1}\left(\right.}{e^{3/2}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tanh^{-1}\left(\right.}{e^{3/2}}$$

$$= -\frac{4bn\sqrt{f+gx}}{e} + \frac{4b\sqrt{ef-dg}\,n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{e^{3/2}} + \frac{2b\sqrt{ef-dg}\,n\tanh^{-1}\left(\right.}{e^{3/2}}$$

Mathematica [A] time = 0.500807, size = 534, normalized size = 1.53

$$\frac{-bn\sqrt{ef-dg}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x),x]
```

```
[Out] (4*a*Sqrt[e]*Sqrt[f + g*x] - 8*b*n*(Sqrt[e]*Sqrt[f + g*x] - Sqrt[e*f - d*g]
*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]) + 4*b*Sqrt[e]*Sqrt[f + g
*x]*Log[c*(d + e*x)^n] + 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n])*Log[S
qrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - 2*Sqrt[e*f - d*g]*(a + b*Log[c*(d
 + e*x)^n])*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - b*Sqrt[e*f - d*g
]*n*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sq
rt[e]*Sqrt[f + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/
2]) + 2*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*
Sqrt[e*f - d*g]*n*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e
*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2
*Sqrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g])/2]))/(2*e^(3/2))
```

Maple [F] time = 1.235, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\,(ex+d)^{n}\right)}{ex+d}\sqrt{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

```
[Out] int((g*x+f)^(1/2)*(a+b*ln(c*(e*x+d)^n))/(e*x+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^{n}c\right)+\sqrt{gx+f}\,a}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*x + d),
x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)**(1/2)*(a+b*ln(c*(e*x+d)**n))/(e*x+d),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{gx+f}\left(b\log\left((ex+d)^n c\right)+a\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)^(1/2)*(a+b*log(c*(e*x+d)^n))/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate(sqrt(g*x + f)*(b*log((e*x + d)^n*c) + a)/(e*x + d), x)
```

3.201 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx$

Optimal. Leaf size=256

$$-\frac{2bn\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}\sqrt{ef-dg}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\sqrt{ef-dg}}+\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}}-\frac{4bn\log\left(\frac{}{1-}\right.}{}$$

```
[Out] (2*b*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*Sqrt[e*
f - d*g]) - (2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[
c*(d + e*x)^n]))/(Sqrt[e]*Sqrt[e*f - d*g]) - (4*b*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
])])/(Sqrt[e]*Sqrt[e*f - d*g]) - (2*b*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*Sqrt[e*f - d*g])
```

Rubi [A] time = 0.693756, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 11, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.355, Rules used = {2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315}

$$-\frac{2bn\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{\sqrt{e}\sqrt{ef-dg}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{e}\sqrt{ef-dg}}+\frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}}-\frac{4bn\log\left(\frac{}{1-}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*Sqrt[f + g*x]),x]
```

```
[Out] (2*b*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(Sqrt[e]*Sqrt[e*
f - d*g]) - (2*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[
c*(d + e*x)^n]))/(Sqrt[e]*Sqrt[e*f - d*g]) - (4*b*n*ArcTanh[(Sqrt[e]*Sqrt[f
 + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
])])/(Sqrt[e]*Sqrt[e*f - d*g]) - (2*b*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt
[f + g*x])/Sqrt[e*f - d*g])])/(Sqrt[e]*Sqrt[e*f - d*g])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\sqrt{f+gx}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{e}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} - \frac{(bn)\,\text{Subst}\left(\int -\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f-\frac{dg}{e}+\frac{gx}{e}}}{\sqrt{ef-dg}}\right)}{\sqrt{ef-dg}\,x}\,dx, x\right.}{e}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} + \frac{(2bn)\,\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f-\frac{dg}{e}+\frac{gx}{e}}}{\sqrt{ef-dg}}\right)}{x}\,dx, x, d\right.}{\sqrt{e}\sqrt{ef-dg}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} + \frac{\left(4b\sqrt{e}n\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{e}x}{\sqrt{ef-dg}}\right)}{dg+e(-f+x^2)}\,dx, x, \sqrt{f}\right.}{\sqrt{ef-dg}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} + \frac{\left(4b\sqrt{e}n\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{e}x}{\sqrt{ef-dg}}\right)}{-ef+dg+ex^2}\,dx, x, \sqrt{f}\right.}{\sqrt{ef-dg}}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} - \frac{(4bn)\,\text{Subst}\left(\int \text{ta}\right.}{}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} - \frac{4bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f}}{\sqrt{ef-}}\right.}{\sqrt{e}\sqrt{e}}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} - \frac{4bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f}}{\sqrt{ef-}}\right.}{\sqrt{e}\sqrt{e}}$$

$$= \frac{2bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{\sqrt{e}\sqrt{ef-dg}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{e}\sqrt{ef-dg}} - \frac{4bn\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f}}{\sqrt{ef-}}\right.}{\sqrt{e}\sqrt{e}}$$

Mathematica [A] time = 0.219524, size = 457, normalized size = 1.79

$$-2bn\text{PolyLog}\left(2, \frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right) + 2bn\text{PolyLog}\left(2, \frac{1}{2}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}+1\right)\right) + 2a\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right) - 2a\log\left(\sqrt{ef-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*Sqrt[f + g*x]),x]
```

```
[Out] (2*a*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*b*Log[c*(d + e*x)^n]*
Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] - b*n*Log[Sqrt[e*f - d*g] - Sq
rt[e]*Sqrt[f + g*x]]^2 - 2*a*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] -
 2*b*Log[c*(d + e*x)^n]*Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] + b*n*
Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]^2 + 2*b*n*Log[Sqrt[e*f - d*g]
+ Sqrt[e]*Sqrt[f + g*x]]*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*
g])] - 2*b*n*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*Log[(1 + (Sqrt[e]
*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2] - 2*b*n*PolyLog[2, 1/2 - (Sqrt[e]*Sqrt[
f + g*x])/(2*Sqrt[e*f - d*g])] + 2*b*n*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*
x])/Sqrt[e*f - d*g])/2])/(2*Sqrt[e]*Sqrt[e*f - d*g])
```

Maple [F] time = 1.168, size = 0, normalized size = 0.

$$\int \frac{a + b\ln\left(c\,(ex + d)^n\right)}{ex + d}\,\frac{1}{\sqrt{gx + f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx + f}b\log\left((ex + d)^n c\right) + \sqrt{gx + f}a}{egx^2 + df + \left(ef + dg\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*g*x^2 +
d*f + (e*f + d*g)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(1/2),x)
```

```
[Out] Timed out
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(ex+d)\sqrt{gx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((e*x + d)*sqrt(g*x + f)), x)
```

3.202 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{3/2}}\,dx$

Optimal. Leaf size=340

$$-\frac{2b\sqrt{e}n\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{3/2}}+\frac{2(a+b\log(c(d+ex)^n))}{\sqrt{f+gx}(ef-dg)}-\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{(ef-dg)^{3/2}}+\frac{2b}{}$$

```
[Out] (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(e*f - d*g
)^(3/2) + (2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2
)/(e*f - d*g)^(3/2) + (2*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)*Sqrt[f +
g*x]) - (2*Sqrt[e]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/(e*f - d*g)^(3/2) - (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/(e*f - d*g)^(3/2) - (2*b*Sqrt[e]*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(3/2)
```

Rubi [A] time = 1.02555, antiderivative size = 340, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319}

$$-\frac{2b\sqrt{e}n\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{3/2}}+\frac{2(a+b\log(c(d+ex)^n))}{\sqrt{f+gx}(ef-dg)}-\frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{(ef-dg)^{3/2}}+\frac{2b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(3/2)),x]
```


```
[Out] (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(e*f - d*g
)^(3/2) + (2*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2
)/(e*f - d*g)^(3/2) + (2*(a + b*Log[c*(d + e*x)^n]))/((e*f - d*g)*Sqrt[f +
g*x]) - (2*Sqrt[e]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*
Log[c*(d + e*x)^n]))/(e*f - d*g)^(3/2) - (4*b*Sqrt[e]*n*ArcTanh[(Sqrt[e]*Sq
rt[f + g*x])/Sqrt[e*f - d*g]]*Log[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
 d*g])])/(e*f - d*g)^(3/2) - (2*b*Sqrt[e]*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*
Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(3/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rubi steps

$$\int \frac{a+b\log \left(c(d+ex)^n\right)}{(d+ex)(f+gx)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx,x,d+ex\right)}{e}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx,x,d+ex\right)}{ef-dg} - \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx,x,d+ex\right)}{e(ef-dg)}$$

$$= \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^{3/2}} - \frac{(bn)\,\text{Subst}\left(\int \right.}{}$$

$$= \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)^{3/2}} + \frac{\left(2b\sqrt{en}\right)\text{Subs}}{}$$

$$= \frac{4b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c\right.\right.}{(ef-dg)^{3/2}}$$

$$= \frac{4b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)\left(a+b\log\left(c\right.\right.}{(ef-dg)^{3/2}}$$

$$= \frac{4b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\mathrm{t}}{}$$

$$= \frac{4b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\mathrm{t}}{}$$

$$= \frac{4b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\mathrm{t}}{}$$

$$= \frac{4b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{(ef-dg)^{3/2}} + \frac{2b\sqrt{en}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{3/2}} + \frac{2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(ef-dg)\sqrt{f+gx}} - \frac{2\sqrt{e}\,\mathrm{t}}{}$$

Mathematica [A] time = 0.519943, size = 526, normalized size = 1.55

$$\frac{-b\sqrt{en}\sqrt{f+gx}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\log\left(\frac{1}{2}\left(\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(3/2)),x]
```

```
[Out] (8*b*Sqrt[e]*n*Sqrt[f + g*x]*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g
]] + 4*Sqrt[e*f - d*g]*(a + b*Log[c*(d + e*x)^n]) + 2*Sqrt[e]*Sqrt[f + g*x]
*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] -
2*Sqrt[e]*Sqrt[f + g*x]*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] + Sq
rt[e]*Sqrt[f + g*x]] - b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[Sqrt[e*f - d*g] - Sqr
t[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]] + 2*Log[(
1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*PolyLog[2, 1/2 - (Sqrt
[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + b*Sqrt[e]*n*Sqrt[f + g*x]*(Log[S
qrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt
[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 2*
PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]))/(2*(e*f - d*g
)^(3/2)*Sqrt[f + g*x])
```

Maple [F] time = 1.152, size = 0, normalized size = 0.

$$\int \frac{a + b\ln\left(c\,(ex+d)^{n}\right)}{ex+d}\left(gx+f\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^{n}c\right)+\sqrt{gx+f}\,a}{eg^{2}x^{3}+df^{2}+\left(2\,efg+dg^{2}\right)x^{2}+\left(ef^{2}+2\,dfg\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*g^2*x^3
+ d*f^2 + (2*e*f*g + d*g^2)*x^2 + (e*f^2 + 2*d*f*g)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(ex+d)\left(gx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((e*x + d)*(g*x + f)^(3/2)), x)
```

3.203 $\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx$

Optimal. Leaf size=406

$$-\frac{2be^{3/2}n\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{5/2}}-\frac{2e^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{(ef-dg)^{5/2}}+\frac{2e(a+b\log(c(d+ex)^n))}{\sqrt{f+gx}(ef-dg)^2}+$$

```
[Out] (-4*b*e*n)/(3*(e*f - d*g)^2*Sqrt[f + g*x]) + (16*b*e^(3/2)*n*ArcTanh[(Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*(e*f - d*g)^(5/2)) + (2*b*e^(3/2)*n*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(e*f - d*g)^(5/2) + (2*
(a + b*Log[c*(d + e*x)^n]))/(3*(e*f - d*g)*(f + g*x)^(3/2)) + (2*e*(a + b*L
og[c*(d + e*x)^n]))/((e*f - d*g)^2*Sqrt[f + g*x]) - (2*e^(3/2)*ArcTanh[(Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(e*f - d*g
)^(5/2) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*L
og[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(5/2) - (2
*b*e^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(e*f - d*g)^(5/2)
```

Rubi [A] time = 1.38772, antiderivative size = 406, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 14, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.452, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{2be^{3/2}n\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}}\right)}{(ef-dg)^{5/2}}-\frac{2e^{3/2}\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)(a+b\log(c(d+ex)^n))}{(ef-dg)^{5/2}}+\frac{2e(a+b\log(c(d+ex)^n))}{\sqrt{f+gx}(ef-dg)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(5/2)),x]
```


```
[Out] (-4*b*e*n)/(3*(e*f - d*g)^2*Sqrt[f + g*x]) + (16*b*e^(3/2)*n*ArcTanh[(Sqrt[
e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]])/(3*(e*f - d*g)^(5/2)) + (2*b*e^(3/2)*n*
ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]^2)/(e*f - d*g)^(5/2) + (2*
(a + b*Log[c*(d + e*x)^n]))/(3*(e*f - d*g)*(f + g*x)^(3/2)) + (2*e*(a + b*L
og[c*(d + e*x)^n]))/((e*f - d*g)^2*Sqrt[f + g*x]) - (2*e^(3/2)*ArcTanh[(Sqr
t[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*(a + b*Log[c*(d + e*x)^n]))/(e*f - d*g
)^(5/2) - (4*b*e^(3/2)*n*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g]]*L
og[2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])])/(e*f - d*g)^(5/2) - (2
*b*e^(3/2)*n*PolyLog[2, 1 - 2/(1 - (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])
])/(e*f - d*g)^(5/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)(f+gx)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{e}$$

$$= \frac{\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\,dx, x, d+ex\right)}{ef-dg} - \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{5/2}}\,dx, x, d+ex\right)}{e(ef-dg)}$$

$$= \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{e\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{x\sqrt{\frac{ef-dg}{e}+\frac{gx}{e}}}\,dx, x, d+ex\right)}{(ef-dg)^2} - \frac{g\,\text{Subst}\left(\int \frac{a+b\log(cx^n)}{\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)^{3/2}}\right.}{(ef-dg)^2}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e(a+b\log(c(d+ex)^n))}{(ef-dg)^2\sqrt{f+gx}} - \frac{2e^{3/2}\tanh}{}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e(a+b\log(c(d+ex)^n))}{(ef-dg)^2\sqrt{f+gx}} - \frac{2e^{3/2}\tanh}{}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e(a+}{(ef-}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2(a+b\log(c(d+ex)^n))}{3(ef-dg)(f+gx)^{3/2}} + \frac{2e(a+}{(ef-}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{5/2}} + \frac{2(a+}{3(e}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{5/2}} + \frac{2(a+}{3(e}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{5/2}} + \frac{2(a+}{3(e}$$

$$= -\frac{4ben}{3(ef-dg)^2\sqrt{f+gx}} + \frac{16be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)}{3(ef-dg)^{5/2}} + \frac{2be^{3/2}n\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{f+gx}}{\sqrt{ef-dg}}\right)^2}{(ef-dg)^{5/2}} + \frac{2(a+}{3(e}$$

Mathematica [C] time = 0.781404, size = 608, normalized size = 1.5

$$\frac{-3be^{3/2}n(f+gx)^{3/2}\left(2\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{e}\sqrt{f+gx}}{2\sqrt{ef-dg}}\right)+\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)\left(\log\left(\sqrt{ef-dg}-\sqrt{e}\sqrt{f+gx}\right)+2\text{lo}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((d + e*x)*(f + g*x)^(5/2)),x]
```

```
[Out] (24*b*e^(3/2)*n*(f + g*x)^(3/2)*ArcTanh[(Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f -
d*g]] - 8*b*e*Sqrt[e*f - d*g]*n*(f + g*x)*Hypergeometric2F1[-1/2, 1, 1/2, (
e*(f + g*x))/(e*f - d*g)] + 4*(e*f - d*g)^(3/2)*(a + b*Log[c*(d + e*x)^n])
+ 12*e*Sqrt[e*f - d*g]*(f + g*x)*(a + b*Log[c*(d + e*x)^n]) + 6*e^(3/2)*(f
+ g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[
f + g*x]] - 6*e^(3/2)*(f + g*x)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[Sqrt[e
*f - d*g] + Sqrt[e]*Sqrt[f + g*x]] - 3*b*e^(3/2)*n*(f + g*x)^(3/2)*(Log[Sqr
t[e*f - d*g] - Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f - d*g] - Sqrt[e]*Sqrt[f
 + g*x]] + 2*Log[(1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*g])/2]) + 2*Poly
Log[2, 1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*Sqrt[e*f - d*g])]) + 3*b*e^(3/2)*n*
(f + g*x)^(3/2)*(Log[Sqrt[e*f - d*g] + Sqrt[e]*Sqrt[f + g*x]]*(Log[Sqrt[e*f
 - d*g] + Sqrt[e]*Sqrt[f + g*x]] + 2*Log[1/2 - (Sqrt[e]*Sqrt[f + g*x])/(2*S
qrt[e*f - d*g])]) + 2*PolyLog[2, (1 + (Sqrt[e]*Sqrt[f + g*x])/Sqrt[e*f - d*
g])/2]))/(6*(e*f - d*g)^(5/2)*(f + g*x)^(3/2))
```

Maple [F] time = 1.162, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(ex+d\right)^{n}\right)}{ex+d}\left(gx+f\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx+f}\,b\log\left((ex+d)^{n}c\right)+\sqrt{gx+f}\,a}{eg^{3}x^{4}+df^{3}+\left(3\,efg^{2}+dg^{3}\right)x^{3}+3\left(ef^{2}g+dfg^{2}\right)x^{2}+\left(ef^{3}+3\,df^{2}g\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f)*a)/(e*g^3*x^4
+ d*f^3 + (3*e*f*g^2 + d*g^3)*x^3 + 3*(e*f^2*g + d*f*g^2)*x^2 + (e*f^3 + 3*
d*f^2*g)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(e*x+d)/(g*x+f)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left((ex+d)^n c\right) + a}{(ex+d)\left(gx+f\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(e*x+d)/(g*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((e*x + d)*(g*x + f)^(5/2)), x)
```

3.204 $\int \frac{(d+ex)^{3/2}\log(a+bx)}{a+bx}\,dx$

Optimal. Leaf size=381

$$-\frac{2(bd-ae)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{5/2}}-\frac{16\sqrt{d+ex}(bd-ae)}{3b^2}+\frac{2\sqrt{d+ex}(bd-ae)\log(a+bx)}{b^2}+\frac{2(bd-ae)^{3/2}\tanh}{b^{5/2}}$$

```
[Out] (-16*(b*d - a*e)*Sqrt[d + e*x])/(3*b^2) - (4*(d + e*x)^(3/2))/(9*b) + (16*(
b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(3*b^(5/
2)) + (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
^2)/b^(5/2) + (2*(b*d - a*e)*Sqrt[d + e*x]*Log[a + b*x])/b^2 + (2*(d + e*x)
^(3/2)*Log[a + b*x])/(3*b) - (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d +
 e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/b^(5/2) - (4*(b*d - a*e)^(3/2)*ArcTan
h[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e])])/b^(5/2) - (2*(b*d - a*e)^(3/2)*PolyLog[2, 1 - 2/(1 -
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(5/2)
```

Rubi [A] time = 1.5299, antiderivative size = 381, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.609, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2(bd-ae)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{5/2}}-\frac{16\sqrt{d+ex}(bd-ae)}{3b^2}+\frac{2\sqrt{d+ex}(bd-ae)\log(a+bx)}{b^2}+\frac{2(bd-ae)^{3/2}\tanh}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*Log[a + b*x])/(a + b*x),x]
```


```
[Out] (-16*(b*d - a*e)*Sqrt[d + e*x])/(3*b^2) - (4*(d + e*x)^(3/2))/(9*b) + (16*(
b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(3*b^(5/
2)) + (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
^2)/b^(5/2) + (2*(b*d - a*e)*Sqrt[d + e*x]*Log[a + b*x])/b^2 + (2*(d + e*x)
^(3/2)*Log[a + b*x])/(3*b) - (2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d +
 e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/b^(5/2) - (4*(b*d - a*e)^(3/2)*ArcTan
h[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e])])/b^(5/2) - (2*(b*d - a*e)^(3/2)*PolyLog[2, 1 - 2/(1 -
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(5/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}\log(a+bx)}{a+bx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}\log(x)}{x}dx, x, a+bx\right)}{b}$$

$$= \frac{e\,\text{Subst}\left(\int \sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\log(x)\,dx, x, a+bx\right)}{b^2} + \frac{(bd-ae)\,\text{Subst}\left(\int \frac{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\log(x)}{x}dx, x, a\right.}{b^2}$$

$$= \frac{2(d+ex)^{3/2}\log(a+bx)}{3b} - \frac{2\,\text{Subst}\left(\int \frac{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}{x}dx, x, a+bx\right)}{3b} + \frac{(e(bd-ae))\,\text{Subst}\left(\int\right.}{b}$$

$$= -\frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\log(a+bx)}{b^2} + \frac{2(d+ex)^{3/2}\log(a+bx)}{3b} - \frac{2(bd-ae)^{3/2}}{}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\log(a+bx)}{b^2} + \frac{2(d+ex)^{3/2}\log(}{3b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{2(bd-ae)\sqrt{d+ex}\log(a+bx)}{b^2} + \frac{2(d+ex)^{3/2}\log(}{3b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(bd-ae)\sqrt{d+}}{b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(bd-ae)^{3/2}\,\text{ta}}{b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(bd-ae)^{3/2}\,\text{ta}}{b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(bd-ae)^{3/2}\,\text{ta}}{b}$$

$$= -\frac{16(bd-ae)\sqrt{d+ex}}{3b^2} - \frac{4(d+ex)^{3/2}}{9b} + \frac{16(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3b^{5/2}} + \frac{2(bd-ae)^{3/2}\,\text{ta}}{b}$$

Mathematica [A] time = 1.02853, size = 663, normalized size = 1.74

$$\frac{-18(bd-ae)^{3/2}\text{PolyLog}\left(2, \frac{1}{2}-\frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right)+18(bd-ae)^{3/2}\text{PolyLog}\left(2, \frac{1}{2}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}+1\right)\right)+12b^{3/2}(d+ex)^{3/2}\log(a+bx)+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-96*b^(3/2)*d*Sqrt[d + e*x] + 96*a*Sqrt[b]*e*Sqrt[d + e*x] - 8*b^(3/2)*(d
+ e*x)^(3/2) + 96*b*d*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[
b*d - a*e]] - 96*a*e*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b
*d - a*e]] + 36*b^(3/2)*d*Sqrt[d + e*x]*Log[a + b*x] - 36*a*Sqrt[b]*e*Sqrt[
d + e*x]*Log[a + b*x] + 12*b^(3/2)*(d + e*x)^(3/2)*Log[a + b*x] + 18*(b*d -
 a*e)^(3/2)*Log[a + b*x]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - 9*(
b*d - a*e)^(3/2)*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]^2 - 18*(b*d -
 a*e)^(3/2)*Log[a + b*x]*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + 9*(
b*d - a*e)^(3/2)*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]^2 + 18*(b*d -
 a*e)^(3/2)*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*Log[1/2 - (Sqrt[b]
*Sqrt[d + e*x])/(2*Sqrt[b*d - a*e])] - 18*(b*d - a*e)^(3/2)*Log[Sqrt[b*d -
a*e] - Sqrt[b]*Sqrt[d + e*x]]*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a
*e])/2] - 18*(b*d - a*e)^(3/2)*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*
Sqrt[b*d - a*e])] + 18*(b*d - a*e)^(3/2)*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d +
e*x])/Sqrt[b*d - a*e])/2])/(18*b^(5/2))
```

Maple [F] time = 180., size = 0, normalized size = 0.

$$\int \frac{\ln (bx + a)}{bx + a} (ex + d)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] int((e*x+d)^(3/2)*ln(b*x+a)/(b*x+a),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(ex + d)^{\frac{3}{2}} \log (bx + a)}{bx + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] integral((e*x + d)^(3/2)*log(b*x + a)/(b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ex+d)^{\frac{3}{2}} \log(bx+a)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*log(b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate((e*x + d)^(3/2)*log(b*x + a)/(b*x + a), x)
```

3.205 $\int \frac{\sqrt{d+ex}\log(a+bx)}{a+bx}\,dx$

Optimal. Leaf size=323

$$-\frac{2\sqrt{bd-ae}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{3/2}}+\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}}+\frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}-\frac{2\sqrt{bd-ae}}{}$$

```
[Out] (-4*Sqrt[d + e*x])/b + (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]])/b^(3/2) + (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]]^2)/b^(3/2) + (2*Sqrt[d + e*x]*Log[a + b*x])/b - (2*Sqrt
[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/
b^(3/2) - (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e
]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(3/2) - (2*Sqrt[
b*d - a*e]*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])
/b^(3/2)
```

Rubi [A] time = 0.913033, antiderivative size = 323, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.609, Rules used = {2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50}

$$-\frac{2\sqrt{bd-ae}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{b^{3/2}}+\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}}+\frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}-\frac{2\sqrt{bd-ae}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-4*Sqrt[d + e*x])/b + (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]])/b^(3/2) + (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]]^2)/b^(3/2) + (2*Sqrt[d + e*x]*Log[a + b*x])/b - (2*Sqrt
[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/
b^(3/2) - (4*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e
]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/b^(3/2) - (2*Sqrt[
b*d - a*e]*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])
/b^(3/2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\log(a+bx)}{a+bx}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}\log(x)}{x}\,dx, x, a+bx\right)}{b}$$

$$= \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{b^2} + \frac{(bd-ae)\,\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{b^2}$$

$$= \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{b^{3/2}} - \frac{2\,\text{Subst}\left(\int \frac{\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}{x}\,dx \right.}{b}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{b^{3/2}} + \frac{\left(2\sqrt{bd-\right.}{}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{b^{3/2}} + \frac{\left(4\sqrt{bd-\right.}{}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{d+ex}\log(a+bx)}{b} - \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\right.}{b^{3/}}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} + \frac{2\sqrt{d+ex}\log}{b}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} + \frac{2\sqrt{d+ex}\log}{b}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} + \frac{2\sqrt{d+ex}\log}{b}$$

$$= -\frac{4\sqrt{d+ex}}{b} + \frac{4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}} + \frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{b^{3/2}} + \frac{2\sqrt{d+ex}\log}{b}$$

Mathematica [A] time = 0.356524, size = 534, normalized size = 1.65

$$-2\sqrt{bd-ae}\text{PolyLog}\left(2, \frac{1}{2} - \frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right) + 2\sqrt{bd-ae}\text{PolyLog}\left(2, \frac{1}{2}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}+1\right)\right) - \sqrt{bd-ae}\log^2\left(\sqrt{bd-ae} - \sqrt{b}\sqrt{d+e\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*Log[a + b*x])/(a + b*x),x]
```

```
[Out] (-8*Sqrt[b]*Sqrt[d + e*x] + 8*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]] + 4*Sqrt[b]*Sqrt[d + e*x]*Log[a + b*x] + 2*Sqrt[b*d - a
```

```
*e]*Log[a + b*x]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - Sqrt[b*d -
a*e]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]^2 - 2*Sqrt[b*d - a*e]*Log
[a + b*x]*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + Sqrt[b*d - a*e]*Lo
g[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]^2 + 2*Sqrt[b*d - a*e]*Log[Sqrt[b
*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*Log[1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqr
t[b*d - a*e])] - 2*Sqrt[b*d - a*e]*Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e
*x]]*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2] - 2*Sqrt[b*d - a*
e]*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqrt[b*d - a*e])] + 2*Sqrt[b
*d - a*e]*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2])/(2*b
^(3/2))
```

Maple [F] time = 0.835, size = 0, normalized size = 0.

$$\int \frac{\ln(bx+a)}{bx+a}\sqrt{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] int((e*x+d)^(1/2)*ln(b*x+a)/(b*x+a),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{ex+d}\log(bx+a)}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*ln(b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{ex+d}\log(bx+a)}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*log(b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(sqrt(e*x + d)*log(b*x + a)/(b*x + a), x)
```

3.206 $\int \frac{\log(a+bx)}{(a+bx)\sqrt{d+ex}}\,dx$

Optimal. Leaf size=242

$$-\frac{2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{\sqrt{b}\sqrt{bd-ae}}+\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}}-\frac{2\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}-\frac{4\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}(}{\sqrt{b}\sqrt{bd-ae}}$$

```
[Out] (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(Sqrt[b]*Sqrt[b*d -
a*e]) - (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(
Sqrt[b]*Sqrt[b*d - a*e]) - (4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*
e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(Sqrt[b]*Sqrt[b*d
 - a*e]) - (2*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]
)])/(Sqrt[b]*Sqrt[b*d - a*e])
```

Rubi [A] time = 0.645323, antiderivative size = 242, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 11, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.478, Rules used = {2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315}

$$-\frac{2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{\sqrt{b}\sqrt{bd-ae}}+\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}}-\frac{2\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}-\frac{4\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)\tanh^{-1}(}{\sqrt{b}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*Sqrt[d + e*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(Sqrt[b]*Sqrt[b*d -
a*e]) - (2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(
Sqrt[b]*Sqrt[b*d - a*e]) - (4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*
e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(Sqrt[b]*Sqrt[b*d
 - a*e]) - (2*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]
)])/(Sqrt[b]*Sqrt[b*d - a*e])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)\sqrt{d+ex}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{\text{Subst}\left(\int -\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-\frac{ae}{b}+\frac{ex}{b}}}{\sqrt{bd-ae}}\right)}{\sqrt{bd-ae}x}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} + \frac{2\,\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-\frac{ae}{b}+\frac{ex}{b}}}{\sqrt{bd-ae}}\right)}{x}\,dx, x, a+bx\right)}{\sqrt{b}\sqrt{bd-ae}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} + \frac{\left(4\sqrt{b}\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bd-ae}}\right)}{ae+b\left(-d+x^2\right)}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{bd-ae}}$$

$$= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} + \frac{\left(4\sqrt{b}\right)\text{Subst}\left(\int \frac{x\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bd-ae}}\right)}{-bd+ae+bx^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\,\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bd-ae}}\right)}{1-\frac{\sqrt{b}x}{\sqrt{bd-ae}}}\,dx, x, \sqrt{d\right.}{bd-ae}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

$$= \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{\sqrt{b}\sqrt{bd-ae}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{\sqrt{b}\sqrt{bd-ae}} - \frac{4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log\left(\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right.}{\sqrt{b}\sqrt{bd-ae}}$$

Mathematica [A] time = 2.69314, size = 239, normalized size = 0.99

$$\frac{\frac{\sqrt{\frac{b(d+ex)}{bd-ae}}\left(-4\text{PolyLog}\left(2,\frac{1}{2}-\frac{1}{2}\sqrt{\frac{b(d+ex)}{bd-ae}}\right)+\log^2\left(\frac{e(a+bx)}{ae-bd}\right)+2\log^2\left(\frac{1}{2}\left(\sqrt{\frac{b(d+ex)}{bd-ae}}+1\right)\right)-4\log\left(\frac{1}{2}\left(\sqrt{\frac{b(d+ex)}{bd-ae}}+1\right)\right)\log\left(\frac{e(a+bx)}{ae-bd}\right)\right)}{2\sqrt{d+ex}} - \frac{2\left(\log(a+bx)-\log\left(\frac{e(a+bx)}{ae-bd}\right)\right)\tanh}{\sqrt{d-\frac{ae}{b}}}}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*Sqrt[d + e*x]),x]
```

```
[Out] ((-2*ArcTanh[Sqrt[d + e*x]/Sqrt[d - (a*e)/b]]*(Log[a + b*x] - Log[(e*(a + b
*x))/(-(b*d) + a*e)]))/Sqrt[d - (a*e)/b] + (Sqrt[(b*(d + e*x))/(b*d - a*e)]
```

```
*(Log[(e*(a + b*x))/(-(b*d) + a*e)]^2 - 4*Log[(e*(a + b*x))/(-(b*d) + a*e)]
*Log[(1 + Sqrt[(b*(d + e*x))/(b*d - a*e)])/2] + 2*Log[(1 + Sqrt[(b*(d + e*x
))/(b*d - a*e)])/2]^2 - 4*PolyLog[2, 1/2 - Sqrt[(b*(d + e*x))/(b*d - a*e)]/
2]))/(2*Sqrt[d + e*x]))/b
```

Maple [F] time = 0.842, size = 0, normalized size = 0.

$$\int \frac{\ln (bx+a)}{bx+a}\frac{1}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{ex+d}\log (bx+a)}{bex^2+ad+(bd+ae)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*e*x^2 + a*d + (b*d + a*e)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(bx+a)}{(bx+a)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*sqrt(e*x + d)), x)
```

3.207 $\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=316

$$-\frac{2\sqrt{b}\,\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{3/2}}+\frac{2\log(a+bx)}{\sqrt{d+ex}(bd-ae)}+\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}}+\frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}-\frac{2\sqrt{b}\log(a+}{}$$

```
[Out] (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(3
/2) + (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d -
 a*e)^(3/2) + (2*Log[a + b*x])/((b*d - a*e)*Sqrt[d + e*x]) - (2*Sqrt[b]*Arc
Tanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(b*d - a*e)^(3/
2) - (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 -
 (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e)^(3/2) - (2*Sqrt[b]*
PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e
)^(3/2)
```

Rubi [A] time = 0.944531, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 13, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.565, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319}

$$-\frac{2\sqrt{b}\,\mathrm{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{3/2}}+\frac{2\log(a+bx)}{\sqrt{d+ex}(bd-ae)}+\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}}+\frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}-\frac{2\sqrt{b}\log(a+}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*(d + e*x)^(3/2)),x]
```


```
[Out] (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(3
/2) + (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d -
 a*e)^(3/2) + (2*Log[a + b*x])/((b*d - a*e)*Sqrt[d + e*x]) - (2*Sqrt[b]*Arc
Tanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[a + b*x])/(b*d - a*e)^(3/
2) - (4*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log[2/(1 -
 (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e)^(3/2) - (2*Sqrt[b]*
PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d - a*e
)^(3/2)
```


Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{bd-ae} - \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{b(bd-ae)}$$

$$= \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} - \frac{\text{Subst}\left(\int -\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-\frac{ae}{b}+\frac{ex}{b}}}{\sqrt{bd-ae}}\right)}{\sqrt{bd-aex}}\right.}{bd-ae}$$

$$= \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + \frac{\left(2\sqrt{b}\right)\text{Subst}\left(\int \frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d-\frac{ae}{b}+}}{\sqrt{bd-ae}}\right)}{x}\right.}{(bd-ae)^{3/2}}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + \frac{\left(4b^{3/2}\right.}{}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\log(a+bx)}{(bd-ae)^{3/2}} + \frac{\left(4b^{3/2}\right.}{}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{b}}\right.}{(bd-}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{b}}\right.}{(bd-}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{b}}\right.}{(bd-}$$

$$= \frac{4\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}} + \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{3/2}} + \frac{2\log(a+bx)}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{b}}\right.}{(bd-}$$

Mathematica [A] time = 0.431269, size = 550, normalized size = 1.74

$$\frac{-2\sqrt{b}\sqrt{d+ex}\text{PolyLog}\left(2,\frac{1}{2}-\frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right)+2\sqrt{b}\sqrt{d+ex}\text{PolyLog}\left(2,\frac{1}{2}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}+1\right)\right)-\sqrt{b}\sqrt{d+ex}\log^2\left(\sqrt{bd-ae}-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*(d + e*x)^(3/2)),x]
```

```
[Out] (8*Sqrt[b]*Sqrt[d + e*x]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]] +
 4*Sqrt[b*d - a*e]*Log[a + b*x] + 2*Sqrt[b]*Sqrt[d + e*x]*Log[a + b*x]*Log[
Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - Sqrt[b]*Sqrt[d + e*x]*Log[Sqrt[b
*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]^2 - 2*Sqrt[b]*Sqrt[d + e*x]*Log[a + b*x]
*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + Sqrt[b]*Sqrt[d + e*x]*Log[S
qrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]^2 + 2*Sqrt[b]*Sqrt[d + e*x]*Log[Sqr
t[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*Log[1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*
Sqrt[b*d - a*e])] - 2*Sqrt[b]*Sqrt[d + e*x]*Log[Sqrt[b*d - a*e] - Sqrt[b]*S
qrt[d + e*x]]*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2] - 2*Sqrt
[b]*Sqrt[d + e*x]*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqrt[b*d - a*
e])] + 2*Sqrt[b]*Sqrt[d + e*x]*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt
[b*d - a*e])/2])/(2*(b*d - a*e)^(3/2)*Sqrt[d + e*x])
```

Maple [F] time = 0.86, size = 0, normalized size = 0.

$$\int \frac{\ln\left(bx+a\right)}{bx+a}\left(ex+d\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{ex+d}\log\left(bx+a\right)}{be^2x^3+ad^2+\left(2\,bde+ae^2\right)x^2+\left(bd^2+2\,ade\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*e^2*x^3 + a*d^2 + (2*b*d*e + a*e^2)*
x^2 + (b*d^2 + 2*a*d*e)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(bx+a)}{(bx+a)(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*(e*x + d)^(3/2)), x)
```

3.208 $\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=372

$$-\frac{2b^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{5/2}}+\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}}+\frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}}-\frac{2b^{3/2}\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}$$

```
[Out] (-4*b)/(3*(b*d - a*e)^2*Sqrt[d + e*x]) + (16*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[
d + e*x])/Sqrt[b*d - a*e]])/(3*(b*d - a*e)^(5/2)) + (2*b^(3/2)*ArcTanh[(Sqr
t[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d - a*e)^(5/2) + (2*Log[a + b*x]
)/(3*(b*d - a*e)*(d + e*x)^(3/2)) + (2*b*Log[a + b*x])/((b*d - a*e)^2*Sqrt[
d + e*x]) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log
[a + b*x])/(b*d - a*e)^(5/2) - (4*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d
- a*e)^(5/2) - (2*b^(3/2)*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqr
t[b*d - a*e])])/(b*d - a*e)^(5/2)
```

Rubi [A] time = 1.25739, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 14, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.609, Rules used = {2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51}

$$-\frac{2b^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}}\right)}{(bd-ae)^{5/2}}+\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}}+\frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}}-\frac{2b^{3/2}\log(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/((a + b*x)*(d + e*x)^(5/2)),x]
```

```
[Out] (-4*b)/(3*(b*d - a*e)^2*Sqrt[d + e*x]) + (16*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[
d + e*x])/Sqrt[b*d - a*e]])/(3*(b*d - a*e)^(5/2)) + (2*b^(3/2)*ArcTanh[(Sqr
t[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]^2)/(b*d - a*e)^(5/2) + (2*Log[a + b*x]
)/(3*(b*d - a*e)*(d + e*x)^(3/2)) + (2*b*Log[a + b*x])/((b*d - a*e)^2*Sqrt[
d + e*x]) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]*Log
[a + b*x])/(b*d - a*e)^(5/2) - (4*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/S
qrt[b*d - a*e]]*Log[2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])])/(b*d
- a*e)^(5/2) - (2*b^(3/2)*PolyLog[2, 1 - 2/(1 - (Sqrt[b]*Sqrt[d + e*x])/Sqr
t[b*d - a*e])])/(b*d - a*e)^(5/2)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
```

```
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rubi steps

$$\int \frac{\log(a+bx)}{(a+bx)(d+ex)^{5/2}}\,dx = \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{5/2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{\text{Subst}\left(\int \frac{\log(x)}{x\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x, a+bx\right)}{bd-ae} - \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{5/2}}\,dx, x, a+bx\right)}{b(bd-ae)}$$

$$= \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{b\,\text{Subst}\left(\int \frac{\log(x)}{x\sqrt{\frac{bd-ae}{b}+\frac{ex}{b}}}\,dx, x, a+bx\right)}{(bd-ae)^2} - \frac{e\,\text{Subst}\left(\int \frac{\log(x)}{\left(\frac{bd-ae}{b}+\frac{ex}{b}\right)^{3/2}}\,dx, x\right.}{(bd-ae)^2}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+bx)}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+e}}{\sqrt{bd-ae}}\right.}{(bd-ae)}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+bx)}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+e}}{\sqrt{bd-ae}}\right.}{(bd-ae)}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+b}{(bd-ae)^2\sqrt{d+}}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2\log(a+bx)}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b\log(a+b}{(bd-ae)^2\sqrt{d+}}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2\log(a}{3(bd-ae)(}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2\log(a}{3(bd-ae)(}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2\log(a}{3(bd-ae)(}$$

$$= -\frac{4b}{3(bd-ae)^2\sqrt{d+ex}} + \frac{16b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{3(bd-ae)^{5/2}} + \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)^2}{(bd-ae)^{5/2}} + \frac{2\log(a}{3(bd-ae)(}$$

Mathematica [C] time = 0.865715, size = 568, normalized size = 1.53

$$\frac{-3b^{3/2}(d+ex)^{3/2}\left(2\text{PolyLog}\left(2, \frac{1}{2} - \frac{\sqrt{b}\sqrt{d+ex}}{2\sqrt{bd-ae}}\right) + \log\left(\sqrt{bd-ae}-\sqrt{b}\sqrt{d+ex}\right)\left(\log\left(\sqrt{bd-ae}-\sqrt{b}\sqrt{d+ex}\right) + 2\log\left(\frac{1}{2}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/((a + b*x)*(d + e*x)^(5/2)),x]
```

```
[Out] (24*b^(3/2)*(d + e*x)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]
] - 8*b*Sqrt[b*d - a*e]*(d + e*x)*Hypergeometric2F1[-1/2, 1, 1/2, (b*(d + e
*x))/(b*d - a*e)] + 4*(b*d - a*e)^(3/2)*Log[a + b*x] + 12*b*Sqrt[b*d - a*e]
*(d + e*x)*Log[a + b*x] + 6*b^(3/2)*(d + e*x)^(3/2)*Log[a + b*x]*Log[Sqrt[b
*d - a*e] - Sqrt[b]*Sqrt[d + e*x]] - 6*b^(3/2)*(d + e*x)^(3/2)*Log[a + b*x]
*Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] - 3*b^(3/2)*(d + e*x)^(3/2)*(
Log[Sqrt[b*d - a*e] - Sqrt[b]*Sqrt[d + e*x]]*(Log[Sqrt[b*d - a*e] - Sqrt[b]
*Sqrt[d + e*x]] + 2*Log[(1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e])/2]) +
 2*PolyLog[2, 1/2 - (Sqrt[b]*Sqrt[d + e*x])/(2*Sqrt[b*d - a*e])]) + 3*b^(3/
2)*(d + e*x)^(3/2)*(Log[Sqrt[b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]]*(Log[Sqrt[
b*d - a*e] + Sqrt[b]*Sqrt[d + e*x]] + 2*Log[1/2 - (Sqrt[b]*Sqrt[d + e*x])/(
2*Sqrt[b*d - a*e])]) + 2*PolyLog[2, (1 + (Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
 a*e])/2]))/(6*(b*d - a*e)^(5/2)*(d + e*x)^(3/2))
```

Maple [F] time = 0.865, size = 0, normalized size = 0.

$$\int \frac{\ln \left(bx+a\right)}{bx+a} \left(ex+d\right)^{-\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x)
```

```
[Out] int(ln(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{ex+d}\log\left(bx+a\right)}{be^3x^4+ad^3+\left(3\,bde^2+ae^3\right)x^3+3\,\left(bd^2e+ade^2\right)x^2+\left(bd^3+3\,ad^2e\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(e*x + d)*log(b*x + a)/(b*e^3*x^4 + a*d^3 + (3*b*d*e^2 + a*e^3
)*x^3 + 3*(b*d^2*e + a*d*e^2)*x^2 + (b*d^3 + 3*a*d^2*e)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(b*x+a)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(bx+a)}{(bx+a)(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(b*x+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/((b*x + a)*(e*x + d)^(5/2)), x)
```

3.209 $\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx},x\right)$$

```
[Out] Unintegrable[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

Rubi [A] time = 0.110533, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] Defer[Int][((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

Rubi steps

$$\int \frac{(h+209x)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \int \frac{(h+209x)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Mathematica [A] time = 0.602643, size = 0, normalized size = 0.

$$\int \frac{(h+ix)^q(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] Integrate[((h + i*x)^q*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x), x]
```

Maple [A] time = 1.629, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^q\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^p}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^q*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^q*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^q \left(b\log\left(\left(fx+e\right)c\right)+a\right)^p}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] integrate((i*x + h)^q*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**q*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^q*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.210 $\int \frac{(h+ix)^3(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=305

$$\frac{3i^2 2^{-p-1} e^{-\frac{2a}{b}}(fh-ei)(a+b\log(c(e+fx)))^p \left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p} \text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^4}+\frac{i^3 3^{-p-1} e^{-\frac{3a}{b}}(a+b\,\mathrm{lc}}{}$$

```
[Out] ((f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^4*(1 + p)) + (3^(-1
 - p)*i^3*Gamma[1 + p, (-3*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^3*d*E^((3*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p) + (3*2^(
-1 - p)*i^2*(f*h - e*i)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a +
b*Log[c*(e + f*x)])^p)/(c^2*d*E^((2*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b
))^p) + (3*i*(f*h - e*i)^2*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a +
 b*Log[c*(e + f*x)])^p)/(c*d*E^(a/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rubi [A] time = 0.663943, antiderivative size = 305, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2411, 12, 2353, 2299, 2181, 2302, 30, 2309}

$$\frac{3i^2 2^{-p-1} e^{-\frac{2a}{b}}(fh-ei)(a+b\log(c(e+fx)))^p \left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p} \text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^4}+\frac{i^3 3^{-p-1} e^{-\frac{3a}{b}}(a+b\,\mathrm{lc}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)^3*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^4*(1 + p)) + (3^(-1
 - p)*i^3*Gamma[1 + p, (-3*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^3*d*E^((3*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p) + (3*2^(
-1 - p)*i^2*(f*h - e*i)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a +
b*Log[c*(e + f*x)])^p)/(c^2*d*E^((2*a)/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b
))^p) + (3*i*(f*h - e*i)^2*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a +
 b*Log[c*(e + f*x)])^p)/(c*d*E^(a/b)*f^4*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(h+210x)^3(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-210e+fh}{f}+\frac{210x}{f}\right)^3(a+b\log(cx))^p}{dx}\,dx,x,e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-210e+fh}{f}+\frac{210x}{f}\right)^3(a+b\log(cx))^p}{x}\,dx,x,e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{630(210e-fh)^2(a+b\log(cx))^p}{f^3}-\frac{(210e-fh)^3(a+b\log(cx))^p}{f^3x}-\frac{132300(210e-fh)x(a}{f^3}\right.\right.}{df}$$

$$= \frac{9261000\,\text{Subst}\left(\int x^2(a+b\log(cx))^p\,dx,x,e+fx\right)}{df^4} - \frac{(132300(210e-fh))}{}$$

$$= \frac{9261000\,\text{Subst}\left(\int e^{3x}(a+bx)^p\,dx,x,\log(c(e+fx))\right)}{c^3df^4} - \frac{(132300(210e-fh}{}$$

$$= -\frac{(210e-fh)^3(a+b\log(c(e+fx)))^{1+p}}{bdf^4(1+p)} + \frac{343000\ 3^{2-p}e^{-\frac{3a}{b}}\Gamma\left(1+p,-\frac{3(a+b}{}\right.}{}$$

Mathematica [A] time = 1.30436, size = 247, normalized size = 0.81

$$6^{-p-1}e^{-\frac{3a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\left(c3^{p+1}e^{a/b}(fh-ei)\left(c2^{p+1}e^{a/b}(fh-ei)\left(3bi(p+1)\text{Gamma}\left(p+1,\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] (6^(-1 - p)*(a + b*Log[c*(e + f*x)])^p*(2^(1 + p)*b*i^3*(1 + p)*Gamma[1 + p
, (-3*(a + b*Log[c*(e + f*x)]))/b] + 3^(1 + p)*c*E^(a/b)*(f*h - e*i)*(3*b*i
^2*(1 + p)*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b] + 2^(1 + p)*c*E^(a
/b)*(f*h - e*i)*(3*b*i*(1 + p)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]
- b*c*E^(a/b)*(f*h - e*i)*(-((a + b*Log[c*(e + f*x)])/b))^(1 + p)))))/(b*c^
3*d*E^((3*a)/b)*f^4*(1 + p)*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Maple [F] time = 0.678, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^3 \left(a+b\ln\left(c\left(fx+e\right)\right)\right)^p}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^3*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(bc\log\left(cfx+ce\right)+ac\right)\left(b\log\left(cfx+ce\right)+a\right)^p h^3}{bcdf\left(p+1\right)}+\int \frac{\left(i^3x^3+3\,hi^2x^2+3\,h^2ix\right)\left(b\log\left(fx+e\right)+b\log\left(c\right)+a\right)^p}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h^3/(b*c*d*f*(p + 1
)) + integrate((i^3*x^3 + 3*h*i^2*x^2 + 3*h^2*i*x)*(b*log(f*x + e) + b*log(
c) + a)^p/(d*f*x + d*e), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(i^3x^3+3\,hi^2x^2+3\,h^2ix+h^3\right)\left(b\log\left(cfx+ce\right)+a\right)^p}{dfx+de},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((i^3*x^3 + 3*h*i^2*x^2 + 3*h^2*i*x + h^3)*(b*log(c*f*x + c*e) + a)
^p/(d*f*x + d*e), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^3 \left(b \log \left(\left(fx+e\right)c\right)+a\right)^p}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^3*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

3.211 $\int \frac{(h+ix)^2(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=210

$$\frac{i^2 2^{-p-1} e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)(a+b\log(c(e+$$

```
[Out] ((f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^3*(1 + p)) + (2^(-1
 - p)*i^2*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^2*d*E^((2*a)/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p) + (2*i*(
f*h - e*i)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*
x)])^p)/(c*d*E^(a/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rubi [A] time = 0.472289, antiderivative size = 210, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2411, 12, 2353, 2299, 2181, 2302, 30, 2309}

$$\frac{i^2 2^{-p-1} e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{2(a+b\log(c(e+fx)))}{b}\right)}{c^2df^3}+\frac{2ie^{-\frac{a}{b}}(fh-ei)(a+b\log(c(e+$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)^2*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^3*(1 + p)) + (2^(-1
 - p)*i^2*Gamma[1 + p, (-2*(a + b*Log[c*(e + f*x)]))/b]*(a + b*Log[c*(e + f
*x)])^p)/(c^2*d*E^((2*a)/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p) + (2*i*(
f*h - e*i)*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*
x)])^p)/(c*d*E^(a/b)*f^3*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
```

```
c, p}, x] && IntegerQ[1/n]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2309

```
Int[((a_.) + Log[(c_.)*(x_)]*(b_.))^(p_)*(x_)^(m_.), x_Symbol] :> Dist[1/c^
(m + 1), Subst[Int[E^((m + 1)*x)*(a + b*x)^p, x], x, Log[c*x]], x] /; FreeQ
[{a, b, c, p}, x] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(h+211x)^2(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-211e+fh}{f}+\frac{211x}{f}\right)^2(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$

$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-211e+fh}{f}+\frac{211x}{f}\right)^2(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$

$$= \frac{\text{Subst}\left(\int \left(-\frac{422(211e-fh)(a+b\log(cx))^p}{f^2}+\frac{(211e-fh)^2(a+b\log(cx))^p}{f^2x}+\frac{44521x(a+b\log(cx)}{f^2}\right.\right.}{df}$$

$$= \frac{44521\,\text{Subst}\left(\int x(a+b\log(cx))^p\,dx, x, e+fx\right)}{df^3} - \frac{(422(211e-fh))\,\text{Subst}}{}$$

$$= \frac{44521\,\text{Subst}\left(\int e^{2x}(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{c^2df^3} - \frac{(422(211e-fh))\,\text{Sub}}{}$$

$$= \frac{(211e-fh)^2(a+b\log(c(e+fx)))^{1+p}}{bdf^3(1+p)} + \frac{44521\;2^{-1-p}e^{-\frac{2a}{b}}\Gamma\left(1+p,-\frac{2(a+b\log}{}\right.}{}$$

Mathematica [A] time = 0.507121, size = 189, normalized size = 0.9

$$\frac{2^{-p-1}e^{-\frac{2a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\left(c2^{p+1}e^{a/b}(fh-ei)\left(2bi(p+1)\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)-b\right.\right.}{bc^2df^3(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] (2^(-1 - p)*(a + b*Log[c*(e + f*x)])^p*(b*i^2*(1 + p)*Gamma[1 + p, (-2*(a +
 b*Log[c*(e + f*x)]))/b] + 2^(1 + p)*c*E^(a/b)*(f*h - e*i)*(2*b*i*(1 + p)*G
amma[1 + p, -((a + b*Log[c*(e + f*x)])/b)] - b*c*E^(a/b)*(f*h - e*i)*(-((a
+ b*Log[c*(e + f*x)])/b))^(1 + p))))/(b*c^2*d*E^((2*a)/b)*f^3*(1 + p)*(-((a
 + b*Log[c*(e + f*x)])/b))^p)
```

Maple [F] time = 0.836, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2 \left(a+b\ln\left(c\left(fx+e\right)\right)\right)^p}{dfx+de}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)^2*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(bc\log\left(cfx+ce\right)+ac\right)\left(b\log\left(cfx+ce\right)+a\right)^p h^2}{bcdf\left(p+1\right)}+\int \frac{\left(i^2x^2+2\,hix\right)\left(b\log\left(fx+e\right)+b\log\left(c\right)+a\right)^p}{dfx+de}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima
")
```

```
[Out] (b*c*log(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h^2/(b*c*d*f*(p + 1
)) + integrate((i^2*x^2 + 2*h*i*x)*(b*log(f*x + e) + b*log(c) + a)^p/(d*f*x
 + d*e), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(i^2x^2+2\,hix+h^2\right)\left(b\log\left(cfx+ce\right)+a\right)^p}{dfx+de}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas
")
```

```
[Out] integral((i^2*x^2 + 2*h*i*x + h^2)*(b*log(c*f*x + c*e) + a)^p/(d*f*x + d*e)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2 \left(b \log\left(\left(fx+e\right)c\right)+a\right)^p}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

3.212 $\int \frac{(h+ix)(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=115

$$\frac{ie^{-\frac{a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^2}+\frac{(fh-ei)(a+b\log(c(e+fx)))^{p+1}}{bdf^2(p+1)}$$

```
[Out] ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^2*(1 + p)) + (i*Gamma
[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*x)])^p)/(c*d*E^(
a/b)*f^2*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rubi [A] time = 0.28188, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2411, 12, 2353, 2299, 2181, 2302, 30}

$$\frac{ie^{-\frac{a}{b}}(a+b\log(c(e+fx)))^p\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{cdf^2}+\frac{(fh-ei)(a+b\log(c(e+fx)))^{p+1}}{bdf^2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((f*h - e*i)*(a + b*Log[c*(e + f*x)])^(1 + p))/(b*d*f^2*(1 + p)) + (i*Gamma
[1 + p, -((a + b*Log[c*(e + f*x)])/b)]*(a + b*Log[c*(e + f*x)])^p)/(c*d*E^(
a/b)*f^2*(-((a + b*Log[c*(e + f*x)])/b))^p)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rubi steps

$$\int \frac{(h+212x)(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(\frac{-212e+fh}{f}+\frac{212x}{f}\right)(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(\frac{-212e+fh}{f}+\frac{212x}{f}\right)(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{212(a+b\log(cx))^p}{f}+\frac{(-212e+fh)(a+b\log(cx))^p}{fx}\right)dx, x, e+fx\right)}{df}$$
$$= \frac{212\,\text{Subst}\left(\int (a+b\log(cx))^p\,dx, x, e+fx\right)}{df^2} - \frac{(212e-fh)\,\text{Subst}\left(\int \frac{(a+b\log(}{x}\right.}{df^2}$$
$$= \frac{212\,\text{Subst}\left(\int e^x(a+bx)^p\,dx, x, \log(c(e+fx))\right)}{cdf^2} - \frac{(212e-fh)\,\text{Subst}\left(\int x^p\,d\right.}{bd}$$
$$= -\frac{(212e-fh)(a+b\log(c(e+fx)))^{1+p}}{bdf^2(1+p)} + \frac{212e^{-\frac{a}{b}}\Gamma\left(1+p,-\frac{a+b\log(c(e+fx))}{b}\right)(a}{}$$

Mathematica [A] time = 0.2233, size = 106, normalized size = 0.92

$$\frac{(a+b\log(c(e+fx)))^p\left(\frac{ie^{-\frac{a}{b}}\left(-\frac{a+b\log(c(e+fx))}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log(c(e+fx))}{b}\right)}{c}+\frac{(fh-ei)(a+b\log(c(e+fx)))}{b(p+1)}\right)}{df^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(e + f*x)])^p)/(d*e + d*f*x),x]
```

```
[Out] ((a + b*Log[c*(e + f*x)])^p*(((f*h - e*i)*(a + b*Log[c*(e + f*x)]))/(b*(1 +
 p)) + (i*Gamma[1 + p, -((a + b*Log[c*(e + f*x)])/b)])/(c*E^(a/b)*(-((a + b
*Log[c*(e + f*x)])/b))^p)))/(d*f^2)
```

Maple [F] time = 0.487, size = 0, normalized size = 0.

$$\int \frac{(ix+h)\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^{p}}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] int((i*x+h)*(a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$i\int \frac{\left(b\log\left(fx+e\right)+b\log\left(c\right)+a\right)^{p}x}{dfx+de}\,dx+\frac{\left(bc\log\left(cfx+ce\right)+ac\right)\left(b\log\left(cfx+ce\right)+a\right)^{p}h}{bcdf\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] i*integrate((b*log(f*x + e) + b*log(c) + a)^p*x/(d*f*x + d*e), x) + (b*c*lo
g(c*f*x + c*e) + a*c)*(b*log(c*f*x + c*e) + a)^p*h/(b*c*d*f*(p + 1))
```

Fricas [A] time = 1.82375, size = 270, normalized size = 2.35

$$\frac{\left(bip+bi\right)e^{\left(-\frac{bp\log\left(-\frac{1}{b}\right)+a}{b}\right)}\Gamma\left(p+1,-\frac{b\log\left(cfx+ce\right)+a}{b}\right)+\left(acfh-acei+\left(bcfh-bcei\right)\log\left(cfx+ce\right)\right)\left(b\log\left(cfx+ce\right)+a\right)^{p}}{bcdf^{2}p+bcdf^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] ((b*i*p + b*i)*e^(-(b*p*log(-1/b) + a)/b)*gamma(p + 1, -(b*log(c*f*x + c*e)
 + a)/b) + (a*c*f*h - a*c*e*i + (b*c*f*h - b*c*e*i)*log(c*f*x + c*e))*(b*lo
g(c*f*x + c*e) + a)^p)/(b*c*d*f^2*p + b*c*d*f^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{dfx+de}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((f*x + e)*c) + a)^p/(d*f*x + d*e), x)
```

3.213 $\int \frac{(a+b\log(c(e+fx)))^p}{de+dfx}\,dx$

Optimal. Leaf size=31

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

```
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

Rubi [A] time = 0.0751913, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {2390, 12, 2302, 30}

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{de+dfx}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^p}{dx}\,dx, x, e+fx\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \frac{(a+b\log(cx))^p}{x}\,dx, x, e+fx\right)}{df}$$
$$= \frac{\text{Subst}\left(\int x^p\,dx, x, a+b\log(c(e+fx))\right)}{bdf}$$
$$= \frac{(a+b\log(c(e+fx)))^{1+p}}{bdf(1+p)}$$

Mathematica [A] time = 0.0119069, size = 31, normalized size = 1.

$$\frac{(a+b\log(c(e+fx)))^{p+1}}{bdf(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/(d*e + d*f*x),x]
```

```
[Out] (a + b*Log[c*(e + f*x)])^(1 + p)/(b*d*f*(1 + p))
```

Maple [A] time = 0.064, size = 32, normalized size = 1.

$$\frac{\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^{1+p}}{bdf\left(1+p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e),x)
```

```
[Out] (a+b*ln(c*(f*x+e)))^(1+p)/b/d/f/(1+p)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.80185, size = 96, normalized size = 3.1

$$\frac{\left(b\log\left(cfx+ce\right)+a\right)\left(b\log\left(cfx+ce\right)+a\right)^p}{bdfp+bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="fricas")
```

```
[Out] (b*log(c*f*x + c*e) + a)*(b*log(c*f*x + c*e) + a)^p/(b*d*f*p + b*d*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.24523, size = 43, normalized size = 1.39

$$\frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p+1}}{bdf\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e),x, algorithm="giac")
```

```
[Out] (b*log((f*x + e)*c) + a)^(p + 1)/(b*d*f*(p + 1))
```

3.214 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{(a+b\log(c(e+fx)))^p}{(h+ix)(de+dfx)},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

Rubi [A] time = 0.130206, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+214x)(de+dfx)}\,dx = \int \frac{(a+b\log(c(e+fx)))^p}{(h+214x)(de+dfx)}\,dx$$

Mathematica [A] time = 0.611067, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)),x]
```

```
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)), x]
```

Maple [A] time = 0.974, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^p}{\left(dfx+de\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="maxima")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b\log\left(cfx+ce\right)+a\right)^{p}}{dfix^{2}+deh+\left(dfh+dei\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*i*x^2 + d*e*h + (d*f*h + d*e*i)*x)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)), x)
```

3.215 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{(a+b\log(c(e+fx)))^p}{(h+ix)^2(de+dfx)},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

Rubi [A] time = 0.126725, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2),x]

[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+215x)^2(de+dfx)}\,dx = \int \frac{(a+b\log(c(e+fx)))^p}{(h+215x)^2(de+dfx)}\,dx$$

Mathematica [A] time = 0.535467, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2),x]

[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^2), x]
```

Maple [A] time = 0.831, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^p}{\left(dfx+de\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x)

[Out] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="maxima
")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^2), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b\log\left(cfx+ce\right)+a\right)^{p}}{dfi^{2}x^{3}+deh^{2}+\left(2\,dfhi+dei^{2}\right)x^{2}+\left(dfh^{2}+2\,dehi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="fricas
")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*i^2*x^3 + d*e*h^2 + (2*d*f*h*i + d
*e*i^2)*x^2 + (d*f*h^2 + 2*d*e*h*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^2), x)
```

3.216 $\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{(a+b\log(c(e+fx)))^p}{(h+ix)^3(de+dfx)},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

Rubi [A] time = 0.128657, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

Rubi steps

$$\int \frac{(a+b\log(c(e+fx)))^p}{(h+216x)^3(de+dfx)}\,dx=\int \frac{(a+b\log(c(e+fx)))^p}{(h+216x)^3(de+dfx)}\,dx$$

Mathematica [A] time = 0.70019, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(e+fx)))^p}{(de+dfx)(h+ix)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3),x]
```

```
[Out] Integrate[(a + b*Log[c*(e + f*x)])^p/((d*e + d*f*x)*(h + i*x)^3), x]
```

Maple [A] time = 0.862, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(fx+e\right)\right)\right)^p}{\left(dfx+de\right)\left(ix+h\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x)
```

```
[Out] int((a+b*ln(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="maxima
")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^3), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(b\log\left(cfx+ce\right)+a\right)^{p}}{dfi^{3}x^{4}+deh^{3}+\left(3\,dfhi^{2}+dei^{3}\right)x^{3}+3\left(dfh^{2}i+dehi^{2}\right)x^{2}+\left(dfh^{3}+3\,deh^{2}i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="fricas
")
```

```
[Out] integral((b*log(c*f*x + c*e) + a)^p/(d*f*i^3*x^4 + d*e*h^3 + (3*d*f*h*i^2 +
 d*e*i^3)*x^3 + 3*(d*f*h^2*i + d*e*h*i^2)*x^2 + (d*f*h^3 + 3*d*e*h^2*i)*x),
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(f*x+e)))**p/(d*f*x+d*e)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(fx+e\right)c\right)+a\right)^{p}}{\left(dfx+de\right)\left(ix+h\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(f*x+e)))^p/(d*f*x+d*e)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((f*x + e)*c) + a)^p/((d*f*x + d*e)*(i*x + h)^3), x)
```

3.217 $\int \frac{(h+ix)^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=402

$$\frac{bn(gh-fi)^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{(h+ix)^2(gh-fi)\,(a+b\log\left(c(d+ex)^n\right))}{2g^2}+\frac{(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(}{g^4}$$

```
[Out] (a*i*(g*h - f*i)^2*x)/g^3 - (b*i*(e*h - d*i)^2*n*x)/(3*e^2*g) - (b*i*(e*h -
 d*i)*(g*h - f*i)*n*x)/(2*e*g^2) - (b*i*(g*h - f*i)^2*n*x)/g^3 - (b*(e*h -
d*i)*n*(h + i*x)^2)/(6*e*g) - (b*(g*h - f*i)*n*(h + i*x)^2)/(4*g^2) - (b*n*
(h + i*x)^3)/(9*g) - (b*(e*h - d*i)^3*n*Log[d + e*x])/(3*e^3*g) - (b*(e*h -
 d*i)^2*(g*h - f*i)*n*Log[d + e*x])/(2*e^2*g^2) + (b*i*(g*h - f*i)^2*(d + e
*x)*Log[c*(d + e*x)^n])/(e*g^3) + ((g*h - f*i)*(h + i*x)^2*(a + b*Log[c*(d
+ e*x)^n]))/(2*g^2) + ((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((g*
h - f*i)^3*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 +
 (b*(g*h - f*i)^3*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^4
```

Rubi [A] time = 0.363683, antiderivative size = 402, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43}

$$\frac{bn(gh-fi)^3\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{(h+ix)^2(gh-fi)\,(a+b\log\left(c(d+ex)^n\right))}{2g^2}+\frac{(gh-fi)^3\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(}{g^4}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```


```
[Out] (a*i*(g*h - f*i)^2*x)/g^3 - (b*i*(e*h - d*i)^2*n*x)/(3*e^2*g) - (b*i*(e*h -
 d*i)*(g*h - f*i)*n*x)/(2*e*g^2) - (b*i*(g*h - f*i)^2*n*x)/g^3 - (b*(e*h -
d*i)*n*(h + i*x)^2)/(6*e*g) - (b*(g*h - f*i)*n*(h + i*x)^2)/(4*g^2) - (b*n*
(h + i*x)^3)/(9*g) - (b*(e*h - d*i)^3*n*Log[d + e*x])/(3*e^3*g) - (b*(e*h -
 d*i)^2*(g*h - f*i)*n*Log[d + e*x])/(2*e^2*g^2) + (b*i*(g*h - f*i)^2*(d + e
*x)*Log[c*(d + e*x)^n])/(e*g^3) + ((g*h - f*i)*(h + i*x)^2*(a + b*Log[c*(d
+ e*x)^n]))/(2*g^2) + ((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((g*
h - f*i)^3*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 +
 (b*(g*h - f*i)^3*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^4
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int \frac{(h+217x)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int\left(\frac{217(-217f+gh)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{217(-217f+gh)(h+217x)}{g^2}\right.$$

$$=\frac{217\int(h+217x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g}-\frac{(217(217f-gh))\int(h+217x)}{g^2}$$

$$=\frac{217a(217f-gh)^2x}{g^3}-\frac{(217f-gh)(h+217x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{(h+}{}$$

$$=\frac{217a(217f-gh)^2x}{g^3}-\frac{(217f-gh)(h+217x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2}+\frac{(h+}{}$$

$$=\frac{217a(217f-gh)^2x}{g^3}-\frac{217b(217d-eh)^2nx}{3e^2g}-\frac{217b(217d-eh)(217f-gh)nx}{2eg^2}$$

Mathematica [A] time = 0.580326, size = 379, normalized size = 0.94

$$36be^3n(gh-fi)^3\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+e\left(gix\left(6ae^2\left(6f^2i^2-3fgi(6h+ix)+g^2\left(18h^2+9hix+2i^2x^2\right)\right)-bn\left(12d^2g^2i^2-\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (6*b*d^2*g^2*i^2*(-9*e*g*h + 3*e*f*i + 2*d*g*i)*n*Log[d + e*x] + e*(g*i*x*(
6*a*e^2*(6*f^2*i^2 - 3*f*g*i*(6*h + i*x) + g^2*(18*h^2 + 9*h*i*x + 2*i^2*x^
2)) - b*n*(12*d^2*g^2*i^2 - 6*d*e*g*i*(9*g*h - 3*f*i + g*i*x) + e^2*(36*f^2
*i^2 - 9*f*g*i*(12*h + i*x) + g^2*(108*h^2 + 27*h*i*x + 4*i^2*x^2)))) + 36*
a*e^2*(g*h - f*i)^3*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*e*Log[c*(d + e*x)^
n]*(g*i*(6*d*(3*g^2*h^2 - 3*f*g*h*i + f^2*i^2) + e*x*(6*f^2*i^2 - 3*f*g*i*(
6*h + i*x) + g^2*(18*h^2 + 9*h*i*x + 2*i^2*x^2))) + 6*e*(g*h - f*i)^3*Log[(
e*(f + g*x))/(e*f - d*g)])) + 36*b*e^3*(g*h - f*i)^3*n*PolyLog[2, (g*(d + e
*x))/(-(e*f) + d*g)])/(36*e^3*g^4)
```

Maple [C] time = 0.602, size = 2801, normalized size = 7.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^3*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] 1/3*b*ln((e*x+d)^n)*i^3/g*x^3+b*ln((e*x+d)^n)/g*ln(g*x+f)*h^3+a*i^3/g^3*f^2
*x+3*a*i/g*h^2*x-a/g^4*ln(g*x+f)*f^3*i^3-1/2*a*i^3/g^2*x^2*f+1/3*b*ln(c)*i^
3/g*x^3+b*ln(c)/g*ln(g*x+f)*h^3+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/
g^3*ln(g*x+f)*f^2*h*i^2-3*b/e*n/g^2*i^2*d*ln((g*x+f)*e+d*g-f*e)*f*h+1/4*I*b
*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^3/g^2*x^2*f-3/2*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h^2*i-1/2*I*b*Pi*csgn(I*c
)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*ln(g*x+f)*h^3-3/2*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3/g^3*ln(g*x+f)*f^2*h*i^2-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2*i^2/g^2*f*h*x+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2/g^3*ln(g*x+f)*f^2*h*i^2+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2*i/g*h^2*x-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x
+f)*f*h^2*i+3*b*ln((e*x+d)^n)/g^3*ln(g*x+f)*f^2*h*i^2-3*b*ln((e*x+d)^n)/g^2
*ln(g*x+f)*f*h^2*i+1/6*b/e*n/g*i^3*d*x^2+3*b*n/g^2*i^2*h*f*x+1/3*b/e^3*n/g*
i^3*d^3*ln((g*x+f)*e+d*g-f*e)+b*n/g^4*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g
-e*f))*f^3*i^3-3*b*n/g^3*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f^2*h*i^2+3*b
*n/g^2*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f*h^2*i-1/9*b*n/g*i^3*x^3-49/36
*b*n/g^4*i^3*f^3-b*n/g*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*h^3+3/2*a*i^2/g
*x^2*h+3*b*ln(c)/g^3*ln(g*x+f)*f^2*h*i^2-3*b*ln(c)/g^2*ln(g*x+f)*f*h^2*i-3*
b*ln(c)*i^2/g^2*f*h*x+b/e*n/g^3*i^3*d*ln((g*x+f)*e+d*g-f*e)*f^2+3/2*b/e*n/g
*i^2*d*h*x-1/2*b/e*n/g^2*i^3*d*f*x-3/2*b/e^2*n/g*i^2*d^2*ln((g*x+f)*e+d*g-f
*e)*h+1/2*b/e^2*n/g^2*i^3*d^2*ln((g*x+f)*e+d*g-f*e)*f-3*b*n/g^3*ln(g*x+f)*l
n(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f^2*h*i^2+3/2*b/e*n/g^2*i^2*d*h*f+1/6*I*b*
Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^3/g*x^3+1/2*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2*i^3/g^3*f^2*x-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)*i^3/g*x^3-1/2*b*ln((e*x+d)^n)*i^3/g^2*x^2*f+3/2*b*ln((e*
x+d)^n)*i^2/g*x^2*h+b*ln((e*x+d)^n)*i^3/g^3*f^2*x+3*b*ln((e*x+d)^n)*i/g*h^2
*x-b*ln((e*x+d)^n)/g^4*ln(g*x+f)*f^3*i^3-2/3*b/e*n/g^3*i^3*d*f^2-1/3*b/e^2*
n/g^2*i^3*d^2*f-1/2*b*ln(c)*i^3/g^2*x^2*f+3/2*b*ln(c)*i^2/g*x^2*h+b*ln(c)*i
^3/g^3*f^2*x-1/3*b/e^2*n/g*i^3*d^2*x+a/g*ln(g*x+f)*h^3+1/3*a*i^3/g*x^3+1/4*
I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g^2*x^2*f+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3
/g^4*ln(g*x+f)*f^3*i^3+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g
*ln(g*x+f)*h^3+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^3/g*x^3-1/2*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3*i^3/g^3*f^2*x-3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^
2/g*x^2*h-3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i/g*h^2*x+1/2*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^3+3*b/e*n/g*i*d*ln((g*x+f)*e+d*g-f*e)*h^
```

```
2+3*b*n/g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f*h^2*i+3*a/g^3*ln(
g*x+f)*f^2*h*i^2-3*a/g^2*ln(g*x+f)*f*h^2*i-3*a*i^2/g^2*f*h*x+3*b*ln(c)*i/g*
h^2*x-b*ln(c)/g^4*ln(g*x+f)*f^3*i^3-b*n/g*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/
(d*g-e*f))*h^3-3*b*n/g*i*h^2*x+1/4*b*n/g^2*i^3*x^2*f-b*n/g^3*i^3*x*f^2-3/4*
b*n/g*i^2*h*x^2+b*n/g^4*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f^3*i^3+15/4*b
*n/g^3*i^2*h*f^2-3*b*n/g^2*i*h^2*f-3*b*ln((e*x+d)^n)*i^2/g^2*f*h*x-1/2*I*b*
Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+f)*h^3-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i
^3/g*x^3+3/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2*h+3/4
*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2*h-1/2*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/g^4*ln(g*x+f)*f^3*i^3+3/2*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3*i^2/g^2*f*h*x-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^3/g^2*x^
2*f-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i/g*h^2*x-3/
2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*h*x+3/2*I*b*Pi*csgn(I*c*
(e*x+d)^n)^3/g^2*ln(g*x+f)*f*h^2*i-3/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)*i^2/g*x^2*h-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)*i^3/g^3*f^2*x+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)*i^2/g^2*f*h*x-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)/g^3*ln(g*x+f)*f^2*h*i^2+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)/g^2*ln(g*x+f)*f*h^2*i+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)/g^4*ln(g*x+f)*f^3*i^3-1/4*I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2*i^3/g^2*x^2*f-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2/g^4*ln(g*x+f)*f^3*i^3+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2*i^3/g^3*f^2*x+3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i/g*h^2*x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$3\,ah^2i\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)-\frac{1}{6}\,ai^3\left(\frac{6\,f^3\log\left(gx+f\right)}{g^4}-\frac{2\,g^2x^3-3\,fgx^2+6\,f^2x}{g^3}\right)+\frac{3}{2}\,ahi^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2\,f}{g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 3*a*h^2*i*(x/g - f*log(g*x + f)/g^2) - 1/6*a*i^3*(6*f^3*log(g*x + f)/g^4 -
(2*g^2*x^3 - 3*f*g*x^2 + 6*f^2*x)/g^3) + 3/2*a*h*i^2*(2*f^2*log(g*x + f)/g^
3 + (g*x^2 - 2*f*x)/g^2) + a*h^3*log(g*x + f)/g + integrate((b*i^3*x^3*log(
c) + 3*b*h*i^2*x^2*log(c) + 3*b*h^2*i*x*log(c) + b*h^3*log(c) + (b*i^3*x^3
+ 3*b*h*i^2*x^2 + 3*b*h^2*i*x + b*h^3)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ai^3x^3+3\,ahi^2x^2+3\,ah^2ix+ah^3+\left(bi^3x^3+3\,bhi^2x^2+3\,bh^2ix+bh^3\right)\log\left(\left(ex+d\right)^nc\right)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*i^3*x^3 + 3*a*h*i^2*x^2 + 3*a*h^2*i*x + a*h^3 + (b*i^3*x^3 + 3*
b*h*i^2*x^2 + 3*b*h^2*i*x + b*h^3)*log((e*x + d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(h+ix\right)^{3}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)**3/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^{3}\left(b\log\left((ex+d)^{n}c\right)+a\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^3*(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

3.218 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=241

$$\frac{bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{(h+ix)^2(a+b\log(c(d+ex)^n))}{2g}+$$

```
[Out] (a*i*(g*h - f*i)*x)/g^2 - (b*i*(e*h - d*i)*n*x)/(2*e*g) - (b*i*(g*h - f*i)*
n*x)/g^2 - (b*n*(h + i*x)^2)/(4*g) - (b*(e*h - d*i)^2*n*Log[d + e*x])/(2*e^
2*g) + (b*i*(g*h - f*i)*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + ((h + i*x)^
2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*(g*h - f*i)^2*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/g^3
```

Rubi [A] time = 0.222943, antiderivative size = 241, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43}

$$\frac{bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{(gh-fi)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{(h+ix)^2(a+b\log(c(d+ex)^n))}{2g}+$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*(g*h - f*i)*x)/g^2 - (b*i*(e*h - d*i)*n*x)/(2*e*g) - (b*i*(g*h - f*i)*
n*x)/g^2 - (b*n*(h + i*x)^2)/(4*g) - (b*(e*h - d*i)^2*n*Log[d + e*x])/(2*e^
2*g) + (b*i*(g*h - f*i)*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + ((h + i*x)^
2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*(g*h - f*i)^2*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int \frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx}\,dx = \int \left(\frac{218(-218f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{218(h+218x)\left(a+b\log\left(c\right.\right.}{g}\right.$$

$$= \frac{218\int (h+218x)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx}{g} - \frac{(218(218f-gh))\int \left(a+b\log\right.}{g^2}$$

$$= -\frac{218a(218f-gh)x}{g^2}+\frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{(218f-gh)^2}{}$$

$$= -\frac{218a(218f-gh)x}{g^2}+\frac{(h+218x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{(218f-gh)^2}{}$$

$$= -\frac{218a(218f-gh)x}{g^2}+\frac{109b(218d-eh)nx}{eg}+\frac{218b(218f-gh)nx}{g^2}-\frac{bn(h+}{4}$$

Mathematica [A] time = 0.261613, size = 224, normalized size = 0.93

$$\frac{4be^2n(gh-fi)^2\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+e\left(gix(2ae(-2fi+4gh+gix)+bn(2dgi-e(-4fi+8gh+gix)))+4ae(gh-fi\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (-2*b*d^2*g^2*i^2*n*Log[d + e*x] + e*(g*i*x*(2*a*e*(4*g*h - 2*f*i + g*i*x)
+ b*n*(2*d*g*i - e*(8*g*h - 4*f*i + g*i*x))) + 4*a*e*(g*h - f*i)^2*Log[(e*(
f + g*x))/(e*f - d*g)] + 2*b*Log[c*(d + e*x)^n]*(g*i*(d*(4*g*h - 2*f*i) + e
*x*(4*g*h - 2*f*i + g*i*x)) + 2*e*(g*h - f*i)^2*Log[(e*(f + g*x))/(e*f - d*
g)])) + 4*b*e^2*(g*h - f*i)^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/(
4*e^2*g^3)
```

Maple [C] time = 0.536, size = 1605, normalized size = 6.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] -2*b*ln(c)/g^2*ln(g*x+f)*f*h*i-b/e*n/g^2*i^2*d*ln((g*x+f)*e+d*g-f*e)*f+2*b/
e*n/g*i*d*ln((g*x+f)*e+d*g-f*e)*h+2*b*n/g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e
)/(d*g-e*f))*f*h*i+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*i^2/g^2*f*x-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i/g*h
*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*ln(g*x+f)
*f^2*i^2-2*a/g^2*ln(g*x+f)*f*h*i+b*ln(c)/g^3*ln(g*x+f)*f^2*i^2-b*ln(c)*i^2/
g^2*f*x+2*b*ln(c)*i/g*h*x+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)*f*h*i-
1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*ln(g*x+f)*h^2-
1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*x+2*a*i/g*h*x+
a/g^3*ln(g*x+f)*f^2*i^2+b*ln(c)/g*ln(g*x+f)*h^2+1/2*b*ln(c)*i^2/g*x^2-b*n/g
^3*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f^2*i^2+1/2*b/e*n/g*i^2*d*x-
1/2*b/e^2*n/g*i^2*d^2*ln((g*x+f)*e+d*g-f*e)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2/g^2*ln(g*x+f)*f*h*i+1/2*b*ln((e*x+d)^n)*i^2/g*x^2+1/2*b/e*n/g^2*i^2
*d*f+2*b*n/g^2*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f*h*i+I*b*Pi*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i/g*h*x+b*ln((e*x+d)^n)/g*ln(g*x+f)*h^2-1/2*I
*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g^2*f*x-b*ln((e*x+d)^n)*i^2/g^2*f
*x-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)*f*h*i+5/4*b
*n/g^3*f^2*i^2-b*n/g*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*h^2-1/4*b*n/g*i^2
*x^2-a*i^2/g^2*f*x+1/2*a*i^2/g*x^2+a/g*ln(g*x+f)*h^2+1/2*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^2+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*i^2/g
^2*f*x+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i^2/g*x^2+1/2*I*b*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h^2-I*b*Pi*csgn(I*c*(e*x+d)
^n)^3*i/g*h*x-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*ln(g*x+f)*f^2*i^2-1/2*I*
b*Pi*csgn(I*c*(e*x+d)^n)^3/g*ln(g*x+f)*h^2+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2*i^2/g*x^2-2*b*n/g^2*f*h*i-b*n/g^3*dilog(((g*x+f)*e+d*g-f
*e)/(d*g-e*f))*f^2*i^2-b*n/g*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*h^
2+b*n/g^2*i^2*x*f-2*b*n/g*i*h*x+2*b*ln((e*x+d)^n)*i/g*h*x+b*ln((e*x+d)^n)/g
^3*ln(g*x+f)*f^2*i^2+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
/g^2*ln(g*x+f)*f*h*i-2*b*ln((e*x+d)^n)/g^2*ln(g*x+f)*f*h*i-1/4*I*b*Pi*csgn(
I*c*(e*x+d)^n)^3*i^2/g*x^2+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*i/g*h*x+1
/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f^2*i^2-1/4
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*i^2/g*x^2+1/2*I*b*P
i*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*ln(g*x+f)*f^2*i^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,ahi\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{1}{2}\,ai^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2\,fx}{g^2}\right)+\frac{ah^2\log\left(gx+f\right)}{g}+\int\frac{bi^2x^2\log\left(c\right)+2\,bhix\log\left(c\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*a*h*i*(x/g - f*log(g*x + f)/g^2) + 1/2*a*i^2*(2*f^2*log(g*x + f)/g^3 + (g
*x^2 - 2*f*x)/g^2) + a*h^2*log(g*x + f)/g + integrate((b*i^2*x^2*log(c) + 2
*b*h*i*x*log(c) + b*h^2*log(c) + (b*i^2*x^2 + 2*b*h*i*x + b*h^2)*log((e*x +
 d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ai^2x^2 + 2\,ahix + ah^2 + \left(bi^2x^2 + 2\,bhix + bh^2\right)\log\left((ex+d)^n c\right)}{gx+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*i^2*x^2 + 2*a*h*i*x + a*h^2 + (b*i^2*x^2 + 2*b*h*i*x + b*h^2)*l
og((e*x + d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d+ex\right)^n\right)\right)\left(h+ix\right)^2}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)**2/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2\left(b\log\left((ex+d)^n c\right) + a\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

3.219 $\int \frac{(h+ix)(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=119

$$\frac{bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{aix}{g}+\frac{bi(d+ex)\log(c(d+ex)^n)}{eg}-$$

```
[Out] (a*i*x)/g - (b*i*n*x)/g + (b*i*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + ((g*h
- f*i)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*
(g*h - f*i)*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rubi [A] time = 0.138921, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2418, 2389, 2295, 2394, 2393, 2391}

$$\frac{bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{aix}{g}+\frac{bi(d+ex)\log(c(d+ex)^n)}{eg}-$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*i*x)/g - (b*i*n*x)/g + (b*i*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + ((g*h
- f*i)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*
(g*h - f*i)*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(h+219x)(a+b\log(c(d+ex)^n))}{f+gx}\,dx = \int \left(\frac{219(a+b\log(c(d+ex)^n))}{g} + \frac{(-219f+gh)(a+b\log(c(d+ex)^n))}{g(f+gx)}\right) dx$$

$$= \frac{219\int (a+b\log(c(d+ex)^n))\,dx}{g} + \frac{(-219f+gh)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g}$$

$$= \frac{219ax}{g} - \frac{(219f-gh)(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{(219b)\int \log(c$$

$$= \frac{219ax}{g} - \frac{(219f-gh)(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{(219b)\,\mathrm{Subst}(}{}$$

$$= \frac{219ax}{g} - \frac{219bnx}{g} + \frac{219b(d+ex)\log(c(d+ex)^n)}{eg} - \frac{(219f-gh)(a+b\log(}{}$$

Mathematica [A] time = 0.109202, size = 110, normalized size = 0.92

$$\frac{bn(gh-fi)\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+(gh-fi)\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+agix+\frac{bgi(d+ex)\log(c(d+ex)^n)}{e}-bginx}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*g*i*x - b*g*i*n*x + (b*g*i*(d + e*x)*Log[c*(d + e*x)^n])/e + (g*h - f*i)
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + b*(g*h - f*i)*
n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^2
```

Maple [C] time = 0.599, size = 750, normalized size = 6.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)*f*i+1/2*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2*i/g*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)/g^2*ln(g*x+f)*f*i-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2/g^2*ln(g*x+f)*f*i-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)/g*ln(g*x+f)*h-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*i/g*x-a/g^2*ln(g*x+f)*f*i+b*ln(c)/g*ln(g*x+f)*h+b*ln(c)*i/g*x+1/2*I*b*Pi
```

```
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h+b*ln((e*x+d)^n)/g*ln(g*x+f)*
h+b*ln((e*x+d)^n)*i/g*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g
*x+f)*f*i+a/g*ln(g*x+f)*h-b*n/g^2*i*f-b*n/g*dilog(((g*x+f)*e+d*g-f*e)/(d*g-
e*f))*h+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*ln(g*x+f)*h+1/
2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*i/g*x-1/2*I*b*Pi*csgn(I*c*
(e*x+d)^n)^3/g*ln(g*x+f)*h+b/e*n/g*i*d*ln((g*x+f)*e+d*g-f*e)+b*n/g^2*ln(g*x
+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f*i-b*ln((e*x+d)^n)/g^2*ln(g*x+f)*f*i
-b*ln(c)/g^2*ln(g*x+f)*f*i+b*n/g^2*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*f*i
-b*n/g*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*h-1/2*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3*i/g*x+a*i*x/g-b*i*n*x/g
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$ai\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{ah\log\left(gx+f\right)}{g}+\int\frac{bix\log\left(c\right)+bh\log\left(c\right)+\left(bix+bh\right)\log\left(\left(ex+d\right)^n\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*i*(x/g - f*log(g*x + f)/g^2) + a*h*log(g*x + f)/g + integrate((b*i*x*log(
c) + b*h*log(c) + (b*i*x + b*h)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{aix+ah+\left(bix+bh\right)\log\left(\left(ex+d\right)^n c\right)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a*i*x + a*h + (b*i*x + b*h)*log((e*x + d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)\left(h+ix\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(h + i*x)/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(ix+h\right)\left(b\log\left(\left(ex+d\right)^n c\right)+a\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

3.220 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rubi [A] time = 0.0453695, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}dx}{g}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(bn)\,\mathrm{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}dx, x, d+ex\right)}{g}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\mathrm{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

Mathematica [A] time = 0.0065298, size = 62, normalized size = 0.98

$$\frac{bn\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)}{g} + \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)])/g
```

Maple [C] time = 0.115, size = 261, normalized size = 4.1

$$\frac{b\ln\left(gx+f\right)\ln\left((ex+d)^n\right)}{g} - \frac{bn}{g}\mathrm{dilog}\left(\frac{\left(gx+f\right)e+dg-fe}{dg-fe}\right) - \frac{bn\ln\left(gx+f\right)}{g}\ln\left(\frac{\left(gx+f\right)e+dg-fe}{dg-fe}\right) - \frac{\frac{i}{2}\ln\left(gx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{gx+f}\,dx + \frac{a\log\left(gx+f\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(g*x + f), x) + a*log(g*x + f)/g
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c\left(d+ex\right)^n\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

3.221 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=155

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)(a+b\log(}{gh-fi}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) - (
(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i) + (b
*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (b*n*PolyLog[2,
-((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rubi [A] time = 0.195304, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {2418, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{gh-fi}-\frac{bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{gh-fi}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{gh-fi}-\frac{\log\left(\frac{e(h+ix)}{eh-di}\right)(a+b\log(}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) - (
(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i) + (b
*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (b*n*PolyLog[2,
-((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(h+221x)(f+gx)}\,dx = \int \left(\frac{221\,(a+b\log(c(d+ex)^n))}{(221f-gh)(h+221x)} - \frac{g\,(a+b\log(c(d+ex)^n))}{(221f-gh)(f+gx)}\right) dx$$

$$= \frac{221\int \frac{a+b\log(c(d+ex)^n)}{h+221x}\,dx}{221f-gh} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{221f-gh}$$

$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)(a+b\log(c(d+ex)^n))}{221f-gh} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{221f-gh} - \frac{(ben)\int -\ldots}{221\ldots}$$

$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)(a+b\log(c(d+ex)^n))}{221f-gh} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{221f-gh} + \frac{(bn)\,\mathrm{Subs}\ldots}{\ldots}$$

$$= \frac{\log\left(-\frac{e(h+221x)}{221d-eh}\right)(a+b\log(c(d+ex)^n))}{221f-gh} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{221f-gh} - \frac{bn\mathrm{Li}_2\left(-\ldots\right)}{221f-\ldots}$$

Mathematica [A] time = 0.0616598, size = 111, normalized size = 0.72

$$\frac{bn\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right) - bn\mathrm{PolyLog}\left(2,\frac{i(d+ex)}{di-eh}\right) + (a+b\log(c(d+ex)^n))\left(\log\left(\frac{e(f+gx)}{ef-dg}\right) - \log\left(\frac{e(h+ix)}{eh-di}\right)\right)}{gh-fi}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(f + g*x))/(e*f - d*g)] - Log[(e*(h + i
*x))/(e*h - d*i)]) + b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - b*n*Pol
yLog[2, (i*(d + e*x))/(-(e*h) + d*i)])/(g*h - f*i)
```

Maple [C] time = 0.74, size = 647, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x)
```

```
[Out] b*ln((e*x+d)^n)/(f*i-g*h)*ln(i*x+h)-b*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)-b*n
/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))-b*n/(f*i-g*h)*ln(i*x+h)*ln(
((i*x+h)*e+d*i-e*h)/(d*i-e*h))+b*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-f*e)/(d*g
-e*f))+b*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*I*b*Pi
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)*ln(g*x+f)+1/2*I*b*Pi*csgn(I*
c*(e*x+d)^n)^3/(f*i-g*h)*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2/(f*i-g*h)*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(
f*i-g*h)*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)/(f*i-g*h)*ln(i*x+h)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(
f*i-g*h)*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)*ln(i*x+h)+b*l
n(c)/(f*i-g*h)*ln(i*x+h)-b*ln(c)/(f*i-g*h)*ln(g*x+f)+a/(f*i-g*h)*ln(i*x+h)-
a/(f*i-g*h)*ln(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{\log\left(gx+f\right)}{gh-fi}-\frac{\log\left(ix+h\right)}{gh-fi}\right)+b\int\frac{\log\left(\left(ex+d\right)^{n}\right)+\log\left(c\right)}{gix^{2}+fh+\left(gh+fi\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a*(log(g*x + f)/(g*h - f*i) - log(i*x + h)/(g*h - f*i)) + b*integrate((log(
(e*x + d)^n) + log(c))/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(ex+d\right)^{n}c\right)+a}{gix^{2}+fh+\left(gh+fi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(ex+d\right)^{n}c\right)+a}{\left(gx+f\right)\left(ix+h\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*(i*x + h)), x)
```

3.222 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=252

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^2}-\frac{bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{(h+ix)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}$$

```
[Out] -((b*e*n*Log[d + e*x])/((e*h - d*i)*(g*h - f*i))) + (a + b*Log[c*(d + e*x)^
n])/((g*h - f*i)*(h + i*x)) + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
))/(e*f - d*g)])/(g*h - f*i)^2 + (b*e*n*Log[h + i*x])/((e*h - d*i)*(g*h - f
*i)) - (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h -
 f*i)^2 + (b*g*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 -
(b*g*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rubi [A] time = 0.258695, antiderivative size = 252, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {2418, 2394, 2393, 2391, 2395, 36, 31}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^2}-\frac{bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^2}+\frac{a+b\log\left(c(d+ex)^n\right)}{(h+ix)(gh-fi)}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/((e*h - d*i)*(g*h - f*i))) + (a + b*Log[c*(d + e*x)^
n])/((g*h - f*i)*(h + i*x)) + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
))/(e*f - d*g)])/(g*h - f*i)^2 + (b*e*n*Log[h + i*x])/((e*h - d*i)*(g*h - f
*i)) - (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h -
 f*i)^2 + (b*g*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 -
(b*g*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{(h+222x)^2(f+gx)}\,dx = \int \left(\frac{222\left(a+b\log\left(c(d+ex)^n\right)\right)}{(222f-gh)(h+222x)^2} - \frac{222g\left(a+b\log\left(c(d+ex)^n\right)\right)}{(222f-gh)^2(h+222x)} + \frac{g^2\left(a+b\log\left(c(d+ex\right.\right.}{(222f-gh)^2(f+g\right.}$$

$$= -\frac{(222g)\int \frac{a+b\log(c(d+ex)^n)}{h+222x}\,dx}{(222f-gh)^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{(222f-gh)^2} + \frac{222\int \frac{a+b\log(c(d+ex)^n)}{(h+222x)^2}\,dx}{222f-gh}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\frac{e(h+222x)}{222d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(222f-gh)^2} + \frac{g\left(a+b\log\left(c(d\right.\right.}{(222\ldots}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\frac{e(h+222x)}{222d-eh}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{(222f-gh)^2} + \frac{g\left(a+b\log\left(c(d\right.\right.}{(222\ldots}$$

$$= \frac{ben\log(h+222x)}{(222d-eh)(222f-gh)} - \frac{ben\log(d+ex)}{(222d-eh)(222f-gh)} - \frac{a+b\log\left(c(d+ex)^n\right)}{(222f-gh)(h+222x)} - \frac{g\log\left(-\ldots\right.}{}$$

Mathematica [A] time = 0.249641, size = 196, normalized size = 0.78

$$\frac{bgn\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right) - bgn\text{PolyLog}\left(2,\frac{i(d+ex)}{di-eh}\right) + \frac{(gh-fi)(a+b\log(c(d+ex)^n))}{h+ix} + g\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right) - \ldots}{(gh-fi)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] (((g*h - f*i)*(a + b*Log[c*(d + e*x)^n]))/(h + i*x) + g*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - (b*e*(g*h - f*i)*n*(Log[d + e*x] -
 Log[h + i*x]))/(e*h - d*i) - g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x)
)/(e*h - d*i)] + b*g*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - b*g*n*Pol
yLog[2, (i*(d + e*x))/(-(e*h) + d*i)])/(g*h - f*i)^2
```

Maple [C] time = 0.735, size = 970, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] -1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)+1/2*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/(f*i-g*h)^2*ln(i*x+h)-b*n*g/(f*i-g*h)^2*ln(g*
x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b*e*n/(f*i-g*h)/(d*i-e*h)*ln(e*x+d)+
b*e*n/(f*i-g*h)/(d*i-e*h)*ln(i*x+h)+b*n*g/(f*i-g*h)^2*ln(i*x+h)*ln(((i*x+h)
*e+d*i-e*h)/(d*i-e*h))-a*g/(f*i-g*h)^2*ln(i*x+h)+a*g/(f*i-g*h)^2*ln(g*x+f)-
b*ln(c)/(f*i-g*h)/(i*x+h)+b*ln((e*x+d)^n)*g/(f*i-g*h)^2*ln(g*x+f)-b*ln((e*x
+d)^n)*g/(f*i-g*h)^2*ln(i*x+h)-b*n*g/(f*i-g*h)^2*dilog(((g*x+f)*e+d*g-f*e)/
(d*g-e*f))+b*n*g/(f*i-g*h)^2*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))-b*ln(c)*g
/(f*i-g*h)^2*ln(i*x+h)+b*ln(c)*g/(f*i-g*h)^2*ln(g*x+f)-b*ln((e*x+d)^n)/(f*i
-g*h)/(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/
(f*i-g*h)^2*ln(i*x+h)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)/(i*x+h)-1/
2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(i*x+h)+1/
2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(g*x+f)+1/2*I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(g*x+f)-1/2*I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/(f*i-g*h)^2*ln(g*x+f)-1/
2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2*ln(i*x+h)+1/2*I*b*Pi
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*h)/(i*x+h)-a/(f*i-g
*h)/(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)-1/
2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/(f*i-g*h)^2*ln(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{g\log\left(gx+f\right)}{g^2h^2-2\,fghi+f^2i^2}-\frac{g\log\left(ix+h\right)}{g^2h^2-2\,fghi+f^2i^2}+\frac{1}{gh^2-fhi+\left(ghi-fi^2\right)x}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log\left(c\right)}{gi^2x^3+fh^2+\left(2\,ghi+fi^2\right)x^2+\left(gh^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a*(g*log(g*x + f)/(g^2*h^2 - 2*f*g*h*i + f^2*i^2) - g*log(i*x + h)/(g^2*h^2
 - 2*f*g*h*i + f^2*i^2) + 1/(g*h^2 - f*h*i + (g*h*i - f*i^2)*x)) + b*integr
ate((log((e*x + d)^n) + log(c))/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2
+ (g*h^2 + 2*f*h*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^nc\right)+a}{gi^2x^3+fh^2+\left(2\,ghi+fi^2\right)x^2+\left(gh^2+2\,fhi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*
x^2 + (g*h^2 + 2*f*h*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*(i*x + h)^2), x)
```

3.223 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)(h+ix)^3}\,dx$

Optimal. Leaf size=402

$$\frac{bg^2n\mathrm{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^3}-\frac{bg^2n\mathrm{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^3}+\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^3}-\frac{g^2\log\left(\frac{e(h+ix)}{eh-di}\right)(a+}{(gh-}$$

```
[Out] -(b*e*n)/(2*(e*h - d*i)*(g*h - f*i)*(h + i*x)) - (b*e*g*n*Log[d + e*x])/((e
*h - d*i)*(g*h - f*i)^2) - (b*e^2*n*Log[d + e*x])/(2*(e*h - d*i)^2*(g*h - f
*i)) + (a + b*Log[c*(d + e*x)^n])/(2*(g*h - f*i)*(h + i*x)^2) + (g*(a + b*L
og[c*(d + e*x)^n]))/((g*h - f*i)^2*(h + i*x)) + (g^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i)^3 + (b*e*g*n*Log[h + i*x])
/((e*h - d*i)*(g*h - f*i)^2) + (b*e^2*n*Log[h + i*x])/(2*(e*h - d*i)^2*(g*h
 - f*i)) - (g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/
(g*h - f*i)^3 + (b*g^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f
*i)^3 - (b*g^2*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^3
```

Rubi [A] time = 0.371058, antiderivative size = 402, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2394, 2393, 2391, 2395, 44, 36, 31}

$$\frac{bg^2n\mathrm{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{(gh-fi)^3}-\frac{bg^2n\mathrm{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)}{(gh-fi)^3}+\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^3}-\frac{g^2\log\left(\frac{e(h+ix)}{eh-di}\right)(a+}{(gh-}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^3),x]
```


```
[Out] -(b*e*n)/(2*(e*h - d*i)*(g*h - f*i)*(h + i*x)) - (b*e*g*n*Log[d + e*x])/((e
*h - d*i)*(g*h - f*i)^2) - (b*e^2*n*Log[d + e*x])/(2*(e*h - d*i)^2*(g*h - f
*i)) + (a + b*Log[c*(d + e*x)^n])/(2*(g*h - f*i)*(h + i*x)^2) + (g*(a + b*L
og[c*(d + e*x)^n]))/((g*h - f*i)^2*(h + i*x)) + (g^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i)^3 + (b*e*g*n*Log[h + i*x])
/((e*h - d*i)*(g*h - f*i)^2) + (b*e^2*n*Log[h + i*x])/(2*(e*h - d*i)^2*(g*h
 - f*i)) - (g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)])/
(g*h - f*i)^3 + (b*g^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f
*i)^3 - (b*g^2*n*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^3
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(h+223x)^3(f+gx)}\,dx = \int\left(\frac{223\,(a+b\log(c(d+ex)^n))}{(223f-gh)(h+223x)^3} - \frac{223g\,(a+b\log(c(d+ex)^n))}{(223f-gh)^2(h+223x)^2} + \frac{223g^2\,(a+b\log(c(d\cdots}{(223f-gh)^3(h+2\cdots}\right.$$

$$= \frac{\left(223g^2\right)\int\frac{a+b\log(c(d+ex)^n)}{h+223x}\,dx}{(223f-gh)^3} - \frac{g^3\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{(223f-gh)^3} - \frac{(223g)\int\frac{a+b\log(c(d+ex)^n)}{(h+223x)^2}\,dx}{(223f-gh)^2} + \cdots$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2(223f-gh)(h+223x)^2} + \frac{g\,(a+b\log(c(d+ex)^n))}{(223f-gh)^2(h+223x)} + \frac{g^2\log\left(-\frac{e(h+223x)}{223d-eh}\right)(a+b\log(\cdots}{(223f-gh)^3}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2(223f-gh)(h+223x)^2} + \frac{g\,(a+b\log(c(d+ex)^n))}{(223f-gh)^2(h+223x)} + \frac{g^2\log\left(-\frac{e(h+223x)}{223d-eh}\right)(a+b\log(\cdots}{(223f-gh)^3}$$

$$= -\frac{ben}{2(223d-eh)(223f-gh)(h+223x)} - \frac{begn\log(h+223x)}{(223d-eh)(223f-gh)^2} - \frac{be^2n\log(h+22\cdots}{2(223d-eh)^2(223f\cdots}$$

Mathematica [A] time = 0.420305, size = 311, normalized size = 0.77

$$2bg^2n\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-2bg^2n\text{PolyLog}\left(2,\frac{i(d+ex)}{di-eh}\right)+2g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+\frac{2g(gh-fi)(a+b\log(c(d+ex)}{h+ix}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g*x)*(h + i*x)^3),x]
```

```
[Out] (((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n]))/(h + i*x)^2 + (2*g*(g*h - f*i)*
(a + b*Log[c*(d + e*x)^n]))/(h + i*x) + 2*g^2*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(f + g*x))/(e*f - d*g)] - (2*b*e*g*(g*h - f*i)*n*(Log[d + e*x] - Log[h
 + i*x]))/(e*h - d*i) - (b*e*(g*h - f*i)^2*n*(e*h - d*i + e*(h + i*x)*Log[d
 + e*x] - e*(h + i*x)*Log[h + i*x]))/((e*h - d*i)^2*(h + i*x)) - 2*g^2*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h - d*i)] + 2*b*g^2*n*PolyLog[2
, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g^2*n*PolyLog[2, (i*(d + e*x))/(-(e*h
) + d*i)])/(2*(g*h - f*i)^3)
```

Maple [C] time = 0.695, size = 1468, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x)
```

```
[Out] b*ln((e*x+d)^n)*g^2/(f*i-g*h)^3*ln(i*x+h)+b*ln((e*x+d)^n)*g/(f*i-g*h)^2/(i*
x+h)-b*ln((e*x+d)^n)*g^2/(f*i-g*h)^3*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2*g/(f*i-g*h)^2/(i*x+h)+b*e*n/(f*i-g*h)^2/(d*i-e*h)^2*
ln(e*x+d)*d*g*i-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*
g/(f*i-g*h)^2/(i*x+h)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)*g^2/(f*i-g*h)^3*ln(g*x+f)+b*n*g^2/(f*i-g*h)^3*ln(g*x+f)*ln(((g*x+f)*e
+d*g-f*e)/(d*g-e*f))-b*n*g^2/(f*i-g*h)^3*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(
d*i-e*h))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/(f*i-g*h)/(i*x+h)^2+b*ln(c)*g/(f
*i-g*h)^2/(i*x+h)-b*ln(c)*g^2/(f*i-g*h)^3*ln(g*x+f)+b*ln(c)*g^2/(f*i-g*h)^3
*ln(i*x+h)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g^2/(f*i-g*h)
^3*ln(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g^2
/(f*i-g*h)^3*ln(i*x+h)+a*g^2/(f*i-g*h)^3*ln(i*x+h)+a*g/(f*i-g*h)^2/(i*x+h)-
a*g^2/(f*i-g*h)^3*ln(g*x+f)-1/2*b*ln(c)/(f*i-g*h)/(i*x+h)^2-3/2*b*e^2*n/(f*
i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*g*h-1/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(i
*x+h)*f*i+3/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(i*x+h)*g*h-1/2*a/(f*i-g*h)
/(i*x+h)^2-1/2*b*ln((e*x+d)^n)/(f*i-g*h)/(i*x+h)^2+b*n*g^2/(f*i-g*h)^3*dilo
g(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b*n*g^2/(f*i-g*h)^3*dilog(((i*x+h)*e+d*i-e
*h)/(d*i-e*h))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g^2/(f*i-g*h)^3*l
n(i*x+h)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/(f*i-g*
h)/(i*x+h)^2-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g^2/(f*i-g*
h)^3*ln(g*x+f)+1/2*b*e*n/(f*i-g*h)^2/(d*i-e*h)/(i*x+h)*g*h-1/2*b*e*n/(f*i-g
*h)^2/(d*i-e*h)/(i*x+h)*f*i+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/(f
*i-g*h)^2/(i*x+h)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g^2/(f*i-g*h)^
3*ln(g*x+f)+1/2*b*e^2*n/(f*i-g*h)^2/(d*i-e*h)^2*ln(e*x+d)*f*i-b*e*n/(f*i-g*
h)^2/(d*i-e*h)^2*ln(i*x+h)*d*g*i+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g^2/(f*i-
g*h)^3*ln(g*x+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+
h)^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g^2/(f*i-g*h)^3*ln(i*x+h)-1/2*I*b*Pi*
csgn(I*c*(e*x+d)^n)^3*g/(f*i-g*h)^2/(i*x+h)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2/(f*i-g*h)/(i*x+h)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(\frac{2\,g^2\log\left(gx+f\right)}{g^3h^3-3\,fg^2h^2i+3\,f^2ghi^2-f^3i^3}-\frac{2\,g^2\log\left(ix+h\right)}{g^3h^3-3\,fg^2h^2i+3\,f^2ghi^2-f^3i^3}+\frac{2\,gix+}{g^2h^4-2\,fgh^3i+f^2h^2i^2+\left(g^2h^2i^2-2\,fgl\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*g^2*log(g*x + f)/(g^3*h^3 - 3*f*g^2*h^2*i + 3*f^2*g*h*i^2 - f^3*i^3)
 - 2*g^2*log(i*x + h)/(g^3*h^3 - 3*f*g^2*h^2*i + 3*f^2*g*h*i^2 - f^3*i^3) +
 (2*g*i*x + 3*g*h - f*i)/(g^2*h^4 - 2*f*g*h^3*i + f^2*h^2*i^2 + (g^2*h^2*i^
2 - 2*f*g*h*i^3 + f^2*i^4)*x^2 + 2*(g^2*h^3*i - 2*f*g*h^2*i^2 + f^2*h*i^3)*
x))*a + b*integrate((log((e*x + d)^n) + log(c))/(g*i^3*x^4 + f*h^3 + (3*g*h
*i^2 + f*i^3)*x^3 + 3*(g*h^2*i + f*h*i^2)*x^2 + (g*h^3 + 3*f*h^2*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left(\left(ex+d\right)^{n}c\right)+a}{gi^3x^4+fh^3+\left(3\,ghi^2+fi^3\right)x^3+3\left(gh^2i+fhi^2\right)x^2+\left(gh^3+3\,fh^2i\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*i^3*x^4 + f*h^3 + (3*g*h*i^2 + f*i^3
)*x^3 + 3*(g*h^2*i + f*h*i^2)*x^2 + (g*h^3 + 3*f*h^2*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)/(i*x+h)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(ex+d\right)^{n}c\right)+a}{\left(gx+f\right)\left(ix+h\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)/(i*x+h)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*(i*x + h)^3), x)
```

3.224 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=469

$$\frac{2bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}-\frac{2b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{i(d+ex)(eh-di)}{}$$

```
[Out] (-2*a*b*i*(e*h - d*i)*n*x)/(e*g) - (2*a*b*i*(g*h - f*i)*n*x)/g^2 + (2*b^2*i
*(e*h - d*i)*n^2*x)/(e*g) + (2*b^2*i*(g*h - f*i)*n^2*x)/g^2 + (b^2*i^2*n^2*
(d + e*x)^2)/(4*e^2*g) - (2*b^2*i*(e*h - d*i)*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e^2*g) - (2*b^2*i*(g*h - f*i)*n*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) -
 (b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g) + (i*(e*h - d*i
)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g) + (i*(g*h - f*i)*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
+ e*x)^n])^2)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(f + g*x))/(e*f - d*g)])/g^3 + (2*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*x
)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (2*b^2*(g*h - f*i)^2*
n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rubi [A] time = 0.554793, antiderivative size = 469, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 12, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.387, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 2401, 2390, 2305, 2304}

$$\frac{2bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}-\frac{2b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{i(d+ex)(eh-di)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```


```
[Out] (-2*a*b*i*(e*h - d*i)*n*x)/(e*g) - (2*a*b*i*(g*h - f*i)*n*x)/g^2 + (2*b^2*i
*(e*h - d*i)*n^2*x)/(e*g) + (2*b^2*i*(g*h - f*i)*n^2*x)/g^2 + (b^2*i^2*n^2*
(d + e*x)^2)/(4*e^2*g) - (2*b^2*i*(e*h - d*i)*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e^2*g) - (2*b^2*i*(g*h - f*i)*n*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) -
 (b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g) + (i*(e*h - d*i
)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g) + (i*(g*h - f*i)*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
+ e*x)^n])^2)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(f + g*x))/(e*f - d*g)])/g^3 + (2*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*x
)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (2*b^2*(g*h - f*i)^2*
n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g^3
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(h+224x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx = \int\left(\frac{224(-224f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g^2}+\frac{224(h+224x)\left(a+b\log(c\right.}{g}\right.$$

$$=\frac{224\int(h+224x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g}-\frac{(224(224f-gh))\int\left(a+b\log\right.}{g^2}$$

$$=\frac{(224f-gh)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+\frac{224\int\left(\frac{(-224d+eh)(a+b\log}{e}\right.}{}$$

$$=-\frac{224(224f-gh)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg^2}+\frac{(224f-gh)^2\left(a+b\log\right.}{}$$

$$=\frac{448ab(224f-gh)nx}{g^2}-\frac{224(224f-gh)(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg^2}+$$

$$=\frac{448ab(224f-gh)nx}{g^2}-\frac{448b^2(224f-gh)n^2x}{g^2}+\frac{448b^2(224f-gh)n(d+ex)}{eg^2}$$

$$=\frac{448ab(224d-eh)nx}{eg}+\frac{448ab(224f-gh)nx}{g^2}-\frac{448b^2(224f-gh)n^2x}{g^2}+\frac{125}{}$$

$$=\frac{448ab(224d-eh)nx}{eg}+\frac{448ab(224f-gh)nx}{g^2}-\frac{448b^2(224d-eh)n^2x}{eg}-\frac{448}{}$$

Mathematica [A] time = 0.551898, size = 876, normalized size = 1.87

$$\frac{8be^2g^2n\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)\left(\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)+\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)\right)h^2+4b^2e^2g^2n^2\left(\log\left(\frac{e}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (4*e^2*g*i*(2*g*h - f*i)*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2
+ 2*e^2*g^2*i^2*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 4*e^2
*(g*h - f*i)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x]
 + 8*b*e^2*g^2*h^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d +
 e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d
```

```
*g)]) + 2*b*i^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*g*(e*x*(
4*f - g*x) + 2*d*(2*f + g*x)) - 2*Log[d + e*x]*(g*(d + e*x)*(2*e*f + d*g -
e*g*x) - 2*e^2*f^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 4*e^2*f^2*PolyLog[2, (
g*(d + e*x))/(-(e*f) + d*g)]) - 16*b*e*g*h*i*n*(a - b*n*Log[d + e*x] + b*Lo
g[c*(d + e*x)^n])*(-(g*(d + e*x)*(-1 + Log[d + e*x])) + e*f*(Log[d + e*x]*L
og[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]))
+ 8*b^2*e*g*h*i*n^2*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d
+ e*x]^2) - e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d +
e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/
(-(e*f) + d*g)])) - b^2*i^2*n^2*(4*e*f*g*(2*e*x - 2*(d + e*x)*Log[d + e*x]
+ (d + e*x)*Log[d + e*x]^2) + g^2*(e*x*(6*d - e*x) + (-6*d^2 - 4*d*e*x + 2*
e^2*x^2)*Log[d + e*x] + 2*(d^2 - e^2*x^2)*Log[d + e*x]^2) - 4*e^2*f^2*(Log[
d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d
 + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])) + 4
*b^2*e^2*g^2*h^2*n^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log
[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e
*x))/(-(e*f) + d*g)]))/(4*e^2*g^3)
```

Maple [F] time = 1.678, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2 \left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

```
[Out] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,a^2hi\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{1}{2}\,a^2i^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2\,fx}{g^2}\right)+\frac{a^2h^2\log\left(gx+f\right)}{g}+\int\frac{b^2h^2\log\left(c\right)^2+2\,abh^2\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*a^2*h*i*(x/g - f*log(g*x + f)/g^2) + 1/2*a^2*i^2*(2*f^2*log(g*x + f)/g^3
+ (g*x^2 - 2*f*x)/g^2) + a^2*h^2*log(g*x + f)/g + integrate((b^2*h^2*log(c)
^2 + 2*a*b*h^2*log(c) + (b^2*i^2*log(c)^2 + 2*a*b*i^2*log(c))*x^2 + (b^2*i^
2*x^2 + 2*b^2*h*i*x + b^2*h^2)*log((e*x + d)^n)^2 + 2*(b^2*h*i*log(c)^2 + 2
*a*b*h*i*log(c))*x + 2*(b^2*h^2*log(c) + a*b*h^2 + (b^2*i^2*log(c) + a*b*i^
2)*x^2 + 2*(b^2*h*i*log(c) + a*b*h*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2i^2x^2+2\,a^2hix+a^2h^2+\left(b^2i^2x^2+2\,b^2hix+b^2h^2\right)\log\left(\left(ex+d\right)^nc\right)^2+2\left(abi^2x^2+2\,abhix+abh^2\right)\log\left(\left(ex\cdots\right.\right.}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^2*i^2*x^2 + 2*a^2*h*i*x + a^2*h^2 + (b^2*i^2*x^2 + 2*b^2*h*i*x
+ b^2*h^2)*log((e*x + d)^n*c)^2 + 2*(a*b*i^2*x^2 + 2*a*b*h*i*x + a*b*h^2)*l
og((e*x + d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b \log\left(c \left(d + ex\right)^n\right)\right)^2 \left(h + ix\right)^2}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(h + i*x)**2/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix + h)^2 \left(b \log\left((ex + d)^n c\right) + a\right)^2}{gx + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((e*x + d)^n*c) + a)^2/(g*x + f), x)
```

3.225 $\int \frac{(h+ix)(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=215

$$\frac{2bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{2b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f}{ef}\right.}{}$$

```
[Out] (-2*a*b*i*n*x)/g + (2*b^2*i*n^2*x)/g - (2*b^2*i*n*(d + e*x)*Log[c*(d + e*x)
^n])/(e*g) + (i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + ((g*h - f*i
)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (2*b*(
g*h - f*i)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d
*g))])/g^2 - (2*b^2*(g*h - f*i)*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g^2
```

Rubi [A] time = 0.274269, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589}

$$\frac{2bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{2b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{(gh-fi)\log\left(\frac{e(f}{ef}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```



```
[Out] (-2*a*b*i*n*x)/g + (2*b^2*i*n^2*x)/g - (2*b^2*i*n*(d + e*x)*Log[c*(d + e*x)
^n])/(e*g) + (i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + ((g*h - f*i
)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (2*b*(
g*h - f*i)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d
*g))])/g^2 - (2*b^2*(g*h - f*i)*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+225x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx = \int \left(\frac{225\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g} + \frac{(-225f+gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{g(f+gx)}\right) d$$

$$= \frac{225\int \left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx}{g} + \frac{(-225f+gh)\int \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{f+gx}\,dx}{g}$$

$$= -\frac{(225f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{225\,\mathrm{Subst}\left(\int (a+b\log\right.}{eg}$$

$$= \frac{225(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{(225f-gh)\left(a+b\log\left(c(d+ex)^n\right)\right)^2 \log}{g^2}$$

$$= -\frac{450abnx}{g} + \frac{225(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{eg} - \frac{(225f-gh)\left(a+b\log(c\right.}{g}$$

$$= -\frac{450abnx}{g} + \frac{450b^2n^2x}{g} - \frac{450b^2n(d+ex)\log\left(c(d+ex)^n\right)}{eg} + \frac{225(d+ex)(a+}{}$$

Mathematica [B] time = 0.307641, size = 460, normalized size = 2.14

$$2beghn\left(\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)(a+b\log(c(d+ex)^n)-bn\log(d+ex))-2bin\left(ef\left(\text{PolyLo}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x),x]
```

```
[Out] (e*g*i*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + e*(g*h - f*i)*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] + 2*b*e*g*h*n*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[(e*(f + g*x))
/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 2*b*i*n*(a - b*
n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(-(g*(d + e*x)*(-1 + Log[d + e*x]))
+ e*f*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x
))/(-(e*f) + d*g)])) + b^2*i*n^2*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d
+ e*x)*Log[d + e*x]^2) - e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)]
 + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (
g*(d + e*x))/(-(e*f) + d*g)])) + b^2*e*g*h*n^2*(Log[d + e*x]^2*Log[(e*(f +
g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]))/(e*g^2)
```

Maple [F] time = 1.785, size = 0, normalized size = 0.

$$\int \frac{(ix+h)\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

```
[Out] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^2 i\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{a^2h\log\left(gx+f\right)}{g}+\int \frac{b^2h\log\left(c\right)^2+2\,abh\log\left(c\right)+\left(b^2ix+b^2h\right)\log\left(\left(ex+d\right)^n\right)^2+\left(b^2i\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^2*i*(x/g - f*log(g*x + f)/g^2) + a^2*h*log(g*x + f)/g + integrate((b^2*h*
log(c)^2 + 2*a*b*h*log(c) + (b^2*i*x + b^2*h)*log((e*x + d)^n)^2 + (b^2*i*l
og(c)^2 + 2*a*b*i*log(c))*x + 2*(b^2*h*log(c) + a*b*h + (b^2*i*log(c) + a*b
*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2ix+a^2h+\left(b^2ix+b^2h\right)\log\left(\left(ex+d\right)^n c\right)^2+2\left(abix+abh\right)\log\left(\left(ex+d\right)^n c\right)}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^2*i*x + a^2*h + (b^2*i*x + b^2*h)*log((e*x + d)^n*c)^2 + 2*(a*b
*i*x + a*b*h)*log((e*x + d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}\left(h+ix\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2*(h + i*x)/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)\left(b\log\left((ex+d)^{n}c\right)+a\right)^{2}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((e*x + d)^n*c) + a)^2/(g*x + f), x)
```

3.226 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx$

Optimal. Leaf size=111

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n)}{g}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g + (2*b*n*(a
 + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (2*b
^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rubi [A] time = 0.113661, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2396, 2433, 2374, 6589}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{2b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/g + (2*b*n*(a
 + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (2*b
^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2ben)\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(2bn)\,\text{Subst}\left(\int \frac{(a+b\log(cx^n))\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\,dx, x, \right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\,(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{(2b}{}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{2bn\,(a+b\log(c(d+ex)^n))\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} - \frac{2b^2}{}$$

Mathematica [B] time = 0.235963, size = 226, normalized size = 2.04

$$b\left(2n\left(\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)(a+b\log(c(d+ex)^n)-bn\log(d+ex))+bn^2\left(-2\text{PolyLog}\left(3,\frac{g(}{d}\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x),x]
```

```
[Out] (a^2*Log[f + g*x])/g + (b*((-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(2*a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*Log[f + g*x] + 2*n*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)]
 + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b*n^2*(Log[d + e*x]^2*Log[(e
*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])))/g
```

Maple [C] time = 0.075, size = 2018, normalized size = 18.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f),x)
```

```
[Out] I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+b^2*ln(g*(e*x+d)-d*g+f*e)/g*ln((e*x+d)^n)^2-1
/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6+I*ln(g*x+f)/g*ln(c)*Pi*b^2*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^
2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*Pi*a*b*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-
e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*c*
(e*x+d)^n)^2-2/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*ln(c)+2*ln(g*x+
```

```
f)/g*ln(c)*a*b-2*b/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*a-I/g*n*dilog((
(g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*ln(g
*x+f)/g*ln((e*x+d)^n)*b^2*ln(c)+2*b*ln(g*x+f)/g*ln((e*x+d)^n)*a-2*b/g*n*ln(
g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*a+I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2+I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2+b^2*n^2/g*ln(e*x+d)^2*ln(1-g/(d*g-e*f)*(e*x+d))+
2*b^2*n^2/g*ln(e*x+d)*polylog(2,g/(d*g-e*f)*(e*x+d))-2*b^2*n^2*dilog((g*(e*
x+d)-d*g+f*e)/(-d*g+e*f))/g*ln(e*x+d)-2*b^2*n^2*ln(e*x+d)^2*ln((g*(e*x+d)-d
*g+f*e)/(-d*g+e*f))/g-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(g*x+f)/g*Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)-I/g*n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b
^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+a^2*ln(g*x+f)/g-I*ln(g*x+f)/g
*Pi*a*b*csgn(I*c*(e*x+d)^n)^3-2*b^2*n^2/g*polylog(3,g/(d*g-e*f)*(e*x+d))+ln
(g*x+f)/g*ln(c)^2*b^2+I/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/g*n*ln(g*x+f)*ln(((g*x+f)*e+
d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln(g*x+f)/g*ln
(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*b^2*n*dilog((g
*(e*x+d)-d*g+f*e)/(-d*g+e*f))/g*ln((e*x+d)^n)+b^2*ln(g*(e*x+d)-d*g+f*e)/g*l
n(e*x+d)^2*n^2-I*ln(g*x+f)/g*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3-ln(g*x+f)/g
*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4+1/2*ln(g*x+f)/g
*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3-2/g*n*ln(g*x+
f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*ln(c)+I/g*n*dilog(((g*x+f)*e+d*g-f
*e)/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I
*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn
(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-2*b^2*ln(g*(e*x+d)-d*g+f*
e)/g*ln((e*x+d)^n)*ln(e*x+d)*n+2*b^2*n*ln(e*x+d)*ln((g*(e*x+d)-d*g+f*e)/(-d
*g+e*f))/g*ln((e*x+d)^n)-I*ln(g*x+f)/g*ln((e*x+d)^n)*b^2*Pi*csgn(I*c*(e*x+d
)^n)^3+1/2*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4
*ln(g*x+f)/g*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2*ln(g*x+f)/g*Pi^
2*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/4*ln(g*x+f)/g*Pi^2*b^2*csgn(I*(e*x+
d)^n)^2*csgn(I*c*(e*x+d)^n)^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\log\left(gx+f\right)}{g}+\int\frac{b^2\log\left(\left(ex+d\right)^n\right)^2+b^2\log\left(c\right)^2+2\,ab\log\left(c\right)+2\left(b^2\log\left(c\right)+ab\right)\log\left(\left(ex+d\right)^n\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^2*log(g*x + f)/g + integrate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a
*b*log(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2\log\left(\left(ex+d\right)^n c\right)^2+2\,ab\log\left(\left(ex+d\right)^n c\right)+a^2}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x +
 f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{2}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x + f), x)
```

3.227 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=264

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{gh-fi}-\frac{2bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{gh-fi}-\frac{2b^2n^2\text{PolyLo}}{gh}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i) - (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x
))/(e*h - d*i))])/(g*h - f*i) - (2*b^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f
- d*g))])/(g*h - f*i) + (2*b^2*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))]
)/(g*h - f*i)
```

Rubi [A] time = 0.370723, antiderivative size = 264, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {2418, 2396, 2433, 2374, 6589}

$$\frac{2bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{gh-fi}-\frac{2bn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{gh-fi}-\frac{2b^2n^2\text{PolyLo}}{gh}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i) - (2*b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x
))/(e*h - d*i))])/(g*h - f*i) - (2*b^2*n^2*PolyLog[3, -((g*(d + e*x))/(e*f
- d*g))])/(g*h - f*i) + (2*b^2*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))]
)/(g*h - f*i)
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(h+227x)(f+gx)}\,dx = \int \left(\frac{227\,(a+b\log(c(d+ex)^n))^2}{(227f-gh)(h+227x)} - \frac{g\,(a+b\log(c(d+ex)^n))^2}{(227f-gh)(f+gx)}\right)dx$$

$$= \frac{227\int \frac{(a+b\log(c(d+ex)^n))^2}{h+227x}\,dx}{227f-gh} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}\,dx}{227f-gh}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{227f-gh} - \frac{(2ben}{}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{227f-gh} - \frac{(2bn)}{}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{227f-gh} - \frac{2bn\,(}{}$$

$$= \frac{\log\left(-\frac{e(h+227x)}{227d-eh}\right)(a+b\log(c(d+ex)^n))^2}{227f-gh} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{227f-gh} - \frac{2bn\,(}{}$$

Mathematica [A] time = 0.286641, size = 353, normalized size = 1.34

$$\frac{2bn\,(a+b\log(c(d+ex)^n)-bn\log(d+ex))\left(\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-\text{PolyLog}\left(2,\frac{i(d+ex)}{di-eh}\right)+\log(d+ex)\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)-\text{lo}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x] - (a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[h + i*x] + 2*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[(e*(f + g*x))/(e*f - d*g)]
- Log[(e*(h + i*x))/(e*h - d*i)]) + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) + b^2*n^2*(Log[d + e*x]^2*Log
```

```
[(e*(f + g*x))/(e*f - d*g)] - Log[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)]
 + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*Log[d + e*x]
*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)] - 2*PolyLog[3, (g*(d + e*x))/(-(e
*f) + d*g)] + 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)]))/(g*h - f*i)
```

Maple [C] time = 0.912, size = 4712, normalized size = 17.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x)
```

```
[Out] 1/(f*i-g*h)*ln(i*x+h)*ln(c)^2*b^2-1/(f*i-g*h)*ln(g*x+f)*ln(c)^2*b^2-I*n/(f*
i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2+I*n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*n/(f*i-g*h)*ln(g*x+f)*ln(((
g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+b^2/(f*
i-g*h)*ln((e*x+d)*i-d*i+e*h)*ln(e*x+d)^2*n^2+I/(f*i-g*h)*ln(g*x+f)*ln(c)*Pi
*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I/(f*i-g*h)*ln(g*x+f)*
Pi*a*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln((e*x+d)^n)/(f*i
-g*h)*ln(g*x+f)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*n/
(f*i-g*h)*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)-I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c*(e*x+d)^n)
^3+a^2/(f*i-g*h)*ln(i*x+h)-a^2/(f*i-g*h)*ln(g*x+f)-2*b*n/(f*i-g*h)*dilog(((
i*x+h)*e+d*i-e*h)/(d*i-e*h))*a+2*b*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-f*e)/(d
*g-e*f))*a-I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*n
/(f*i-g*h)*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+I/(f*i-g*h)*ln(i*x+h)*ln(c)*Pi*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2+I*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-f*e)
/(d*g-e*f))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n
)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/4/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)^2
*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)
^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I/(f*i-g*h)*ln(g
*x+f)*Pi*a*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*ln((e*x+d)^n)/(f*i-g
*h)*ln(g*x+f)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*ln((e*x+d)^n)/(f*i-g
*h)*ln(g*x+f)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*n/(f*i-g*h)*
ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-I*
n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-2*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*ln(c)+2/(f*i-g
*h)*ln(i*x+h)*ln((e*x+d)^n)*b^2*ln(c)-I/(f*i-g*h)*ln(g*x+f)*ln(c)*Pi*b^2*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*
h)/(d*i-e*h))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I/(f*i-g*h)*ln(g*x+f)*
ln(c)*Pi*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-2*b^2*n^2/(f*i-g*h)*polylog(3,
-i*(e*x+d)/(-d*i+e*h))+2*b^2*n^2/(f*i-g*h)*polylog(3,-g*(e*x+d)/(-d*g+e*f))
+I*n/(f*i-g*h)*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2+I/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c
*(e*x+d)^n)^2-I*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2
*Pi*csgn(I*c*(e*x+d)^n)^3+b^2/(f*i-g*h)*ln((e*x+d)*i-d*i+e*h)*ln((e*x+d)^n)
^2-b^2/(f*i-g*h)*ln(g*(e*x+d)-d*g+f*e)*ln((e*x+d)^n)^2+I/(f*i-g*h)*ln(i*x+h
)*ln((e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2*n/(f*i-g*h
)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*ln(c)+2*n/(f*i-g*h)*dilog(((g*x+
```

```
f)*e+d*g-f*e)/(d*g-e*f))*b^2*ln(c)+2/(f*i-g*h)*ln(i*x+h)*ln(c)*a*b-2/(f*i-g
*h)*ln(g*x+f)*ln(c)*a*b+2*b/(f*i-g*h)*ln(i*x+h)*ln((e*x+d)^n)*a-2*b*ln((e*x
+d)^n)/(f*i-g*h)*ln(g*x+f)*a+2*b^2*n^2/(f*i-g*h)*ln(e*x+d)*polylog(2,-i*(e*
x+d)/(-d*i+e*h))-b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(1+g*(e*x+d)/(-d*g+e*f))-2
*b^2*n^2/(f*i-g*h)*ln(e*x+d)*polylog(2,-g*(e*x+d)/(-d*g+e*f))-2*b^2*n^2/(f*
i-g*h)*dilog(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))*ln(e*x+d)-2*b^2*n^2/(f*i-g*h)*
ln(e*x+d)^2*ln(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))+2*b^2*n^2/(f*i-g*h)*dilog((g
*(e*x+d)-d*g+f*e)/(-d*g+e*f))*ln(e*x+d)+2*b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(
(g*(e*x+d)-d*g+f*e)/(-d*g+e*f))-b^2/(f*i-g*h)*ln(g*(e*x+d)-d*g+f*e)*ln(e*x+
d)^2*n^2+b^2*n^2/(f*i-g*h)*ln(e*x+d)^2*ln(1+i*(e*x+d)/(-d*i+e*h))-2*b*n/(f*
i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*a+2*b*n/(f*i-g*h)*ln(g*x
+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*a+1/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-I/(f*i-g*h)*ln(i*x+h)*ln(c)*P
i*b^2*csgn(I*c*(e*x+d)^n)^3-I/(f*i-g*h)*ln(i*x+h)*Pi*a*b*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln((e*x+d)^n)/(f*i-g*h)*ln(g*x+f)*b^2*Pi*cs
gn(I*c*(e*x+d)^n)^3-I*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f
))*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4/(f*i-g*h)*ln(
i*x+h)*Pi^2*b^2*csgn(I*c*(e*x+d)^n)^6+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn
(I*c*(e*x+d)^n)^6+2*b^2*n/(f*i-g*h)*dilog(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))*l
n((e*x+d)^n)-2*b^2*n/(f*i-g*h)*dilog((g*(e*x+d)-d*g+f*e)/(-d*g+e*f))*ln((e*
x+d)^n)+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^3-1/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^4+I/(f*i-g*h)*ln(g*x+f)*Pi*a*b*csgn(I*c*(e*x+d)^n)^3+
I*n/(f*i-g*h)*dilog(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*c*(e*x+d)^
n)^3+I*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x
+h)*e+d*i-e*h)/(d*i-e*h))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I/
(f*i-g*h)*ln(i*x+h)*ln(c)*Pi*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-1/2/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^3-2*n/(f*i-g*h)*ln(i*x+h)*ln(((i*x+h)*e+d*i-e*h)/(d*i-e*h))*b
^2*ln(c)+2*n/(f*i-g*h)*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))*b^2*ln(c
)-1/2/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(
e*x+d)^n)^3+I/(f*i-g*h)*ln(g*x+f)*ln(c)*Pi*b^2*csgn(I*c*(e*x+d)^n)^3+2*b^2*
n/(f*i-g*h)*ln(e*x+d)*ln(((e*x+d)*i-d*i+e*h)/(-d*i+e*h))*ln((e*x+d)^n)-1/2/
(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5+1/4/(f*i-g*h)*
ln(g*x+f)*Pi^2*b^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4-1/2/(f*i-g*h)*
ln(g*x+f)*Pi^2*b^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-1/4/(f*i-g*h)*ln
(i*x+h)*Pi^2*b^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/2/(f*i-g*h)*ln(i*x+h)*
Pi^2*b^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-2*b^2*n/(f*i-g*h)*ln(e*x+d)*ln((g*
(e*x+d)-d*g+f*e)/(-d*g+e*f))*ln((e*x+d)^n)-2*b^2/(f*i-g*h)*ln((e*x+d)*i-d*i
+e*h)*ln(e*x+d)*ln((e*x+d)^n)*n+2*b^2/(f*i-g*h)*ln(g*(e*x+d)-d*g+f*e)*ln(e*
x+d)*ln((e*x+d)^n)*n+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*c)*csgn(I*(e*x
+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/4/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*(e*x
+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/2/(f*i-g*h)*ln(i*x+h)*Pi^2*b^2*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^5+1/4/(f*i-g*h)*ln(g*x+f)*Pi^2*b^2*csgn(I*c)^2*c
sgn(I*c*(e*x+d)^n)^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\frac{\log\left(gx+f\right)}{gh-fi}-\frac{\log\left(ix+h\right)}{gh-fi}\right)+\int\frac{b^2\log\left(\left(ex+d\right)^n\right)^2+b^2\log\left(c\right)^2+2\,ab\log\left(c\right)+2\left(b^2\log\left(c\right)+ab\right)\log\left(\left(ex+d\right)^n\right)}{gix^2+fh+\left(gh+fi\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^2*(log(g*x + f)/(g*h - f*i) - log(i*x + h)/(g*h - f*i)) + integrate((b^2*
```

```
log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log
((e*x + d)^n))/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gix^2 + fh + \left(gh + fi\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*i*x
^2 + f*h + (g*h + f*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)/(i*x+h),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx + f\right)(ix + h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x + f)*(i*x + h)), x)
```

3.228 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=427

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^2}-\frac{2bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^2}+\frac{2b^2en^2\text{PolyLo}}{(eh-di)}$$

```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (2*b*e*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h -
d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(
h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (2*b*g*n*(a + b*Log[c*(d + e*x)^n])
*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (2*b^2*e*n^2*Pol
yLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) - (2*b*g*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h
- f*i)^2 - (2*b^2*g*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*
i)^2 + (2*b^2*g*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```

Rubi [A] time = 0.490768, antiderivative size = 427, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {2418, 2396, 2433, 2374, 6589, 2397, 2394, 2393, 2391}

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^2}-\frac{2bgn\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^2}+\frac{2b^2en^2\text{PolyLo}}{(eh-di)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)^2),x]
```


```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (2*b*e*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(h + i*x))/(e*h -
d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(
h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (2*b*g*n*(a + b*Log[c*(d + e*x)^n])
*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (2*b^2*e*n^2*Pol
yLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) - (2*b*g*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/(g*h
- f*i)^2 - (2*b^2*g*n^2*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*
i)^2 + (2*b^2*g*n^2*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(h+228x)^2(f+gx)}dx = \int \left(\frac{228(a+b\log(c(d+ex)^n))^2}{(228f-gh)(h+228x)^2} - \frac{228g(a+b\log(c(d+ex)^n))^2}{(228f-gh)^2(h+228x)} + \frac{g^2(a+b\log(c(d+e\right.$$

$$= -\frac{(228g)\int \frac{(a+b\log(c(d+ex)^n))^2}{h+228x}dx}{(228f-gh)^2} + \frac{g^2\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx}dx}{(228f-gh)^2} + \frac{228\int \frac{(a+b\log(c(d+ex)^n))^2}{(h+228x)^2}dx}{228f-gh}$$

$$= -\frac{228(d+ex)(a+b\log(c(d+ex)^n))^2}{(228d-eh)(228f-gh)(h+228x)} - \frac{g\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(228f-gh)^2} + \frac{g(}{}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))}{(228d-eh)(228f-gh)} - \frac{228(d+ex)(a+b\log(c(d+ex)^n))^2}{(228d-eh)(228f-gh)(h+228x)} - \frac{g}{}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))}{(228d-eh)(228f-gh)} - \frac{228(d+ex)(a+b\log(c(d+ex)^n))^2}{(228d-eh)(228f-gh)(h+228x)} - \frac{g}{}$$

$$= \frac{2ben\log\left(-\frac{e(h+228x)}{228d-eh}\right)(a+b\log(c(d+ex)^n))}{(228d-eh)(228f-gh)} - \frac{228(d+ex)(a+b\log(c(d+ex)^n))^2}{(228d-eh)(228f-gh)(h+228x)} - \frac{g}{}$$

Mathematica [A] time = 0.793132, size = 630, normalized size = 1.48

$$\frac{-2bn(a+b\log(c(d+ex)^n)-bn\log(d+ex))\left(-g(h+ix)(eh-di)\left(\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)+g(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] ((e*h - d*i)*(g*h - f*i)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 +
g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log
[f + g*x] - g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^2*Log[h + i*x] - 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])
*((g*h - f*i)*(i*(d + e*x)*Log[d + e*x] - e*(h + i*x)*Log[h + i*x]) - g*(e*
h - d*i)*(h + i*x)*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2
, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]*Lo
g[(e*(h + i*x))/(e*h - d*i)] + PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)])) -
 b^2*n^2*((g*h - f*i)*(Log[d + e*x]*(i*(d + e*x)*Log[d + e*x] - 2*e*(h + i*
x)*Log[(e*(h + i*x))/(e*h - d*i)]) - 2*e*(h + i*x)*PolyLog[2, (i*(d + e*x))
/(-(e*h) + d*i)]) - g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(f + g*x
))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] -
 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log
[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)] + 2*Log[d + e*x]*PolyLog[2, (i*(
d + e*x))/(-(e*h) + d*i)] - 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)])))/(
(e*h - d*i)*(g*h - f*i)^2*(h + i*x))
```

Maple [F] time = 1.826, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2}{\left(gx+f\right)(ix+h)^2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{2}\left(\frac{g\log\left(gx+f\right)}{g^{2}h^{2}-2\,fghi+f^{2}i^{2}}-\frac{g\log\left(ix+h\right)}{g^{2}h^{2}-2\,fghi+f^{2}i^{2}}+\frac{1}{gh^{2}-fhi+\left(ghi-fi^{2}\right)x}\right)+\int\frac{b^{2}\log\left(\left(ex+d\right)^{n}\right)^{2}+b^{2}\log\left(c\right)^{2}+2}{gi^{2}x^{3}+fh^{2}+\left(2g\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")
```

```
[Out] a^2*(g*log(g*x + f)/(g^2*h^2 - 2*f*g*h*i + f^2*i^2) - g*log(i*x + h)/(g^2*h
^2 - 2*f*g*h*i + f^2*i^2) + 1/(g*h^2 - f*h*i + (g*h*i - f*i^2)*x)) + integr
ate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) +
 a*b)*log((e*x + d)^n))/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2 + (g*h^2
 + 2*f*h*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\,ab\log\left(\left(ex+d\right)^{n}c\right)+a^{2}}{gi^{2}x^{3}+fh^{2}+\left(2\,ghi+fi^{2}\right)x^{2}+\left(gh^{2}+2\,fhi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*i^2
*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2 + (g*h^2 + 2*f*h*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x+f)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(ex+d\right)^{n}c\right)+a\right)^{2}}{\left(gx+f\right)\left(ix+h\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x + f)*(i*x + h)^2), x)
```

3.229 $\int \frac{(h+ix)^2(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=660

$$-\frac{6b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{3bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+\right.}{g^3}$$

```
[Out] (6*a*b^2*i*(e*h - d*i)*n^2*x)/(e*g) + (6*a*b^2*i*(g*h - f*i)*n^2*x)/g^2 - (
6*b^3*i*(e*h - d*i)*n^3*x)/(e*g) - (6*b^3*i*(g*h - f*i)*n^3*x)/g^2 - (3*b^3
*i^2*n^3*(d + e*x)^2)/(8*e^2*g) + (6*b^3*i*(e*h - d*i)*n^2*(d + e*x)*Log[c*
(d + e*x)^n])/(e^2*g) + (6*b^3*i*(g*h - f*i)*n^2*(d + e*x)*Log[c*(d + e*x)^
n])/(e*g^2) + (3*b^2*i^2*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2
*g) - (3*b*i*(e*h - d*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g)
- (3*b*i*(g*h - f*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (3
*b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2*g) + (i*(e*h - d*
i)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e^2*g) + (i*(g*h - f*i)*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
 + e*x)^n])^3)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^3*Log[
(e*(f + g*x))/(e*f - d*g)])/g^3 + (3*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*
x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (6*b^2*(g*h - f*i)
^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])
/g^3 + (6*b^3*(g*h - f*i)^2*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```

Rubi [A] time = 0.733561, antiderivative size = 660, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 13, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.419, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 2401, 2390, 2305, 2304}

$$-\frac{6b^2n^2(gh-fi)^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{3bn(gh-fi)^2\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+\right.}{g^3}$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```


```
[Out] (6*a*b^2*i*(e*h - d*i)*n^2*x)/(e*g) + (6*a*b^2*i*(g*h - f*i)*n^2*x)/g^2 - (
6*b^3*i*(e*h - d*i)*n^3*x)/(e*g) - (6*b^3*i*(g*h - f*i)*n^3*x)/g^2 - (3*b^3
*i^2*n^3*(d + e*x)^2)/(8*e^2*g) + (6*b^3*i*(e*h - d*i)*n^2*(d + e*x)*Log[c*
(d + e*x)^n])/(e^2*g) + (6*b^3*i*(g*h - f*i)*n^2*(d + e*x)*Log[c*(d + e*x)^
n])/(e*g^2) + (3*b^2*i^2*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2
*g) - (3*b*i*(e*h - d*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g)
- (3*b*i*(g*h - f*i)*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (3
*b*i^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2*g) + (i*(e*h - d*
i)*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e^2*g) + (i*(g*h - f*i)*(d + e*
x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g^2) + (i^2*(d + e*x)^2*(a + b*Log[c*(d
 + e*x)^n])^3)/(2*e^2*g) + ((g*h - f*i)^2*(a + b*Log[c*(d + e*x)^n])^3*Log[
(e*(f + g*x))/(e*f - d*g)])/g^3 + (3*b*(g*h - f*i)^2*n*(a + b*Log[c*(d + e*
x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^3 - (6*b^2*(g*h - f*i)
^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])
/g^3 + (6*b^3*(g*h - f*i)^2*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(h+229x)^2 (a+b\log(c(d+ex)^n))^3}{f+gx}\,dx = \int \left(\frac{229(-229f+gh)(a+b\log(c(d+ex)^n))^3}{g^2} + \frac{229(h+229x)(a+b\log(c\right.$$

$$= \frac{229\int (h+229x)(a+b\log(c(d+ex)^n))^3\,dx}{g} - \frac{(229(229f-gh))\int (a+b\log\right.}{g^2}$$

$$= \frac{(229f-gh)^2(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3} + \frac{229\int\left(\frac{(-229d+eh)(a+b\log}{e}\right.}{}$$

$$= -\frac{229(229f-gh)(d+ex)(a+b\log(c(d+ex)^n))^3}{eg^2} + \frac{(229f-gh)^2(a+b\log}{}$$

$$= \frac{687b(229f-gh)n(d+ex)(a+b\log(c(d+ex)^n))^2}{eg^2} - \frac{229(229f-gh)(d+ex}{}$$

$$= -\frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{687b(229f-gh)n(d+ex)(a+b\log(c(d+ex)^n}{eg^2}$$

$$= -\frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{1374b^3(229f-gh)n^3x}{g^2} - \frac{1374b^3(229f-gh)n^2}{}$$

$$= -\frac{1374ab^2(229d-eh)n^2x}{eg} - \frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{1374b^3(229f-gh)n}{g^2}$$

$$= -\frac{1374ab^2(229d-eh)n^2x}{eg} - \frac{1374ab^2(229f-gh)n^2x}{g^2} + \frac{1374b^3(229d-eh)n^3}{eg}$$

Mathematica [B] time = 0.862404, size = 1521, normalized size = 2.3

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (8*e^2*g*i*(2*g*h - f*i)*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3
+ 4*e^2*g^2*i^2*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 + 8*e^2
*(g*h - f*i)^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x]
 + 24*b*e^2*g^2*h^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[
d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)]) + 6*b*i^2*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(e*g*(
e*x*(4*f - g*x) + 2*d*(2*f + g*x)) - 2*Log[d + e*x]*(g*(d + e*x)*(2*e*f + d
*g - e*g*x) - 2*e^2*f^2*Log[(e*(f + g*x))/(e*f - d*g)]) + 4*e^2*f^2*PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 48*b*e*g*h*i*n*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])^2*(-(g*(d + e*x)*(-1 + Log[d + e*x])) + e*f*(Log[d +
 e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)])) + 48*b^2*e*g*h*i*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(
g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) - e*f*(Log[
d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyLog[2, (g*(d
 + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])) - 6
*b^2*i^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(4*e*f*g*(2*e*x
```

```
- 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) + g^2*(e*x*(6*d - e*
x) + (-6*d^2 - 4*d*e*x + 2*e^2*x^2)*Log[d + e*x] + 2*(d^2 - e^2*x^2)*Log[d
+ e*x]^2) - 4*e^2*f^2*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Lo
g[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d +
e*x))/(-(e*f) + d*g)])) + 48*b^2*e^2*g^2*h^2*n^2*(a - b*n*Log[d + e*x] + b*
Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)])/2 + Lo
g[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - PolyLog[3, (g*(d + e*
x))/(-(e*f) + d*g)]) + 8*b^3*e^2*g^2*h^2*n^3*(Log[d + e*x]^3*Log[(e*(f + g*
x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4,
(g*(d + e*x))/(-(e*f) + d*g)]) - 16*b^3*e*g*h*i*n^3*(g*(6*e*x - 6*(d + e*x)
*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]^2 - (d + e*x)*Log[d + e*x]^3) + e*
f*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))
/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])) + b^3*i^2*n
^3*(8*e*f*g*(6*e*x - 6*(d + e*x)*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]^2
- (d + e*x)*Log[d + e*x]^3) - g^2*(3*e*x*(-14*d + e*x) + 6*(7*d^2 + 6*d*e*x
 - e^2*x^2)*Log[d + e*x] - 6*(3*d^2 + 2*d*e*x - e^2*x^2)*Log[d + e*x]^2 + 4
*(d^2 - e^2*x^2)*Log[d + e*x]^3) + 8*e^2*f^2*(Log[d + e*x]^3*Log[(e*(f + g*
x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)
] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4,
(g*(d + e*x))/(-(e*f) + d*g)])))/(8*e^2*g^3)
```

Maple [F] time = 2.272, size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

```
[Out] int((i*x+h)^2*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,a^3hi\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+\frac{1}{2}\,a^3i^2\left(\frac{2\,f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2\,fx}{g^2}\right)+\frac{a^3h^2\log\left(gx+f\right)}{g}+\int\frac{b^3h^2\log\left(c\right)^3+3\,ab^2h^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] 2*a^3*h*i*(x/g - f*log(g*x + f)/g^2) + 1/2*a^3*i^2*(2*f^2*log(g*x + f)/g^3
+ (g*x^2 - 2*f*x)/g^2) + a^3*h^2*log(g*x + f)/g + integrate((b^3*h^2*log(c)
^3 + 3*a*b^2*h^2*log(c)^2 + 3*a^2*b*h^2*log(c) + (b^3*i^2*x^2 + 2*b^3*h*i*x
 + b^3*h^2)*log((e*x + d)^n)^3 + (b^3*i^2*log(c)^3 + 3*a*b^2*i^2*log(c)^2 +
 3*a^2*b*i^2*log(c))*x^2 + 3*(b^3*h^2*log(c) + a*b^2*h^2 + (b^3*i^2*log(c)
+ a*b^2*i^2)*x^2 + 2*(b^3*h*i*log(c) + a*b^2*h*i)*x)*log((e*x + d)^n)^2 + 2
*(b^3*h*i*log(c)^3 + 3*a*b^2*h*i*log(c)^2 + 3*a^2*b*h*i*log(c))*x + 3*(b^3*
h^2*log(c)^2 + 2*a*b^2*h^2*log(c) + a^2*b*h^2 + (b^3*i^2*log(c)^2 + 2*a*b^2
*i^2*log(c) + a^2*b*i^2)*x^2 + 2*(b^3*h*i*log(c)^2 + 2*a*b^2*h*i*log(c) + a
^2*b*h*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^3i^2x^2 + 2\,a^3hix + a^3h^2 + \left(b^3i^2x^2 + 2\,b^3hix + b^3h^2\right)\log\left((ex+d)^nc\right)^3 + 3\left(ab^2i^2x^2 + 2\,ab^2hix + ab^2h^2\right)\log\left((ex\right.}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^3*i^2*x^2 + 2*a^3*h*i*x + a^3*h^2 + (b^3*i^2*x^2 + 2*b^3*h*i*x
+ b^3*h^2)*log((e*x + d)^n*c)^3 + 3*(a*b^2*i^2*x^2 + 2*a*b^2*h*i*x + a*b^2*
h^2)*log((e*x + d)^n*c)^2 + 3*(a^2*b*i^2*x^2 + 2*a^2*b*h*i*x + a^2*b*h^2)*l
og((e*x + d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^n\right)\right)^3 (h + ix)^2}{f + gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)**2*(a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3*(h + i*x)**2/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)^2\left(b\log\left((ex+d)^nc\right) + a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)^2*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)^2*(b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

3.230 $\int \frac{(h+ix)(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=308

$$-\frac{6b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{3bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+e$$

```
[Out] (6*a*b^2*i*n^2*x)/g - (6*b^3*i*n^3*x)/g + (6*b^3*i*n^2*(d + e*x)*Log[c*(d +
 e*x)^n])/(e*g) - (3*b*i*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) +
(i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g) + ((g*h - f*i)*(a + b*Log[
c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (3*b*(g*h - f*i)*n*
(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
- (6*b^2*(g*h - f*i)*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*
x))/(e*f - d*g))])/g^2 + (6*b^3*(g*h - f*i)*n^3*PolyLog[4, -((g*(d + e*x))/
(e*f - d*g))])/g^2
```

Rubi [A] time = 0.363952, antiderivative size = 308, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.31, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2(gh-fi)\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{3bn(gh-fi)\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+e$$

Antiderivative was successfully verified.

```
[In] Int[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```


```
[Out] (6*a*b^2*i*n^2*x)/g - (6*b^3*i*n^3*x)/g + (6*b^3*i*n^2*(d + e*x)*Log[c*(d +
 e*x)^n])/(e*g) - (3*b*i*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) +
(i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(e*g) + ((g*h - f*i)*(a + b*Log[
c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (3*b*(g*h - f*i)*n*
(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g^2
- (6*b^2*(g*h - f*i)*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*
x))/(e*f - d*g))])/g^2 + (6*b^3*(g*h - f*i)*n^3*PolyLog[4, -((g*(d + e*x))/
(e*f - d*g))])/g^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(h+230x)(a+b\log(c(d+ex)^n))^3}{f+gx}dx = \int\left(\frac{230(a+b\log(c(d+ex)^n))^3}{g} + \frac{(-230f+gh)(a+b\log(c(d+ex)^n))^3}{g(f+gx)}\right.$$

$$= \frac{230\int(a+b\log(c(d+ex)^n))^3\,dx}{g} + \frac{(-230f+gh)\int\frac{(a+b\log(c(d+ex)^n))^3}{f+gx}dx}{g}$$

$$= -\frac{(230f-gh)(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{230\,\text{Subst}\left(\int(a+b\right.}{}$$

$$= \frac{230(d+ex)(a+b\log(c(d+ex)^n))^3}{eg} - \frac{(230f-gh)(a+b\log(c(d+ex)^n)}{g^2}$$

$$= -\frac{690bn(d+ex)(a+b\log(c(d+ex)^n))^2}{eg} + \frac{230(d+ex)(a+b\log(c(d+e}{eg}$$

$$= \frac{1380ab^2n^2x}{g} - \frac{690bn(d+ex)(a+b\log(c(d+ex)^n))^2}{eg} + \frac{230(d+ex)(a+}{}$$

$$= \frac{1380ab^2n^2x}{g} - \frac{1380b^3n^3x}{g} + \frac{1380b^3n^2(d+ex)\log(c(d+ex)^n)}{eg} - \frac{690bn(d}{}$$

Mathematica [B] time = 0.378134, size = 799, normalized size = 2.59

$$\frac{b^3egh\left(\log\left(\frac{e(f+gx)}{ef-dg}\right)\log^3(d+ex) + 3\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)\log^2(d+ex) - 6\text{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)\log(d+ex) + 6\text{PolyLo}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((h + i*x)*(a + b*Log[c*(d + e*x)^n])^3)/(f + g*x),x]
```

```
[Out] (e*g*i*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 + e*(g*h - f*i)*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*e*g*h*n*(a
 - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x
))/(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) - 3*b*i*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(-(g*(d + e*x)*(-1 + Log[d + e*x
])) + e*f*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog[2, (g*(d +
 e*x))/(-(e*f) + d*g)])) + 3*b^2*i*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d +
 e*x)^n])*(g*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2)
- e*f*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d + e*x]*PolyL
og[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x))/(-(e*f) +
d*g)])) + 6*b^2*e*g*h*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((L
og[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (
g*(d + e*x))/(-(e*f) + d*g)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) +
b^3*e*g*h*n^3*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e*
x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3, (
g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])
- b^3*i*n^3*(g*(6*e*x - 6*(d + e*x)*Log[d + e*x] + 3*(d + e*x)*Log[d + e*x]
^2 - (d + e*x)*Log[d + e*x]^3) + e*f*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f
 - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Lo
g[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d +
```

```
e*x))/(-(e*f) + d*g)]))))/(e*g^2)
```

Maple [F] time = 2.141, size = 0, normalized size = 0.

$$\int \frac{(ix+h)\left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)^{3}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

```
[Out] int((i*x+h)*(a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{3}i\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^{2}}\right)+\frac{a^{3}h\log\left(gx+f\right)}{g}+\int\frac{b^{3}h\log\left(c\right)^{3}+3\,ab^{2}h\log\left(c\right)^{2}+3\,a^{2}bh\log\left(c\right)+\left(b^{3}ix+b^{3}h\right)\log\left((ex+d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^3*i*(x/g - f*log(g*x + f)/g^2) + a^3*h*log(g*x + f)/g + integrate((b^3*h*
log(c)^3 + 3*a*b^2*h*log(c)^2 + 3*a^2*b*h*log(c) + (b^3*i*x + b^3*h)*log((e
*x + d)^n)^3 + 3*(b^3*h*log(c) + a*b^2*h + (b^3*i*log(c) + a*b^2*i)*x)*log(
(e*x + d)^n)^2 + (b^3*i*log(c)^3 + 3*a*b^2*i*log(c)^2 + 3*a^2*b*i*log(c))*x
 + 3*(b^3*h*log(c)^2 + 2*a*b^2*h*log(c) + a^2*b*h + (b^3*i*log(c)^2 + 2*a*b
^2*i*log(c) + a^2*b*i)*x)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^{3}ix+a^{3}h+\left(b^{3}ix+b^{3}h\right)\log\left((ex+d)^{n}c\right)^{3}+3\left(ab^{2}ix+ab^{2}h\right)\log\left((ex+d)^{n}c\right)^{2}+3\left(a^{2}bix+a^{2}bh\right)\log\left((ex+d\right.}{gx+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((a^3*i*x + a^3*h + (b^3*i*x + b^3*h)*log((e*x + d)^n*c)^3 + 3*(a*b
^2*i*x + a*b^2*h)*log((e*x + d)^n*c)^2 + 3*(a^2*b*i*x + a^2*b*h)*log((e*x +
 d)^n*c))/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\,(d+ex)^{n}\right)\right)^{3}(h+ix)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3*(h + i*x)/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(ix+h)\left(b\log\left((ex+d)^{n}c\right)+a\right)^{3}}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)*(a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)*(b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

3.231 $\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx$

Optimal. Leaf size=158

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{6b^3n^3\text{PolyI}}{}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g + (3*b*n*(a
 + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (6
*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g + (6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rubi [A] time = 0.179892, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{3bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))^2}{g}+\frac{6b^3n^3\text{PolyI}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x),x]
```



```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/g + (3*b*n*(a
 + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g - (6
*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))
])/g + (6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/g
```


Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx = \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3ben)\int \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(3bn)\,\text{Subst}\left(\int \frac{(a+b\log(cx^n))^2\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}\,dx\right.}{g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\,(a+b\log(c(d+ex)^n))^2\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} -$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\,(a+b\log(c(d+ex)^n))^2\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} -$$

$$= \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{3bn\,(a+b\log(c(d+ex)^n))^2\,\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g} -$$

Mathematica [B] time = 0.174223, size = 335, normalized size = 2.12

$$\frac{6b^2n^2\left(-\text{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\frac{1}{2}\log^2(d+ex)\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)(a+b\log(c(d+ex)^n)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/(f + g*x),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] + 3*b*n*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*Log[(e*(f + g*x))/
(e*f - d*g)] + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + 6*b^2*n^2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/
(e*f - d*g)])/2 + Log[d + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - P
olyLog[3, (g*(d + e*x))/(-(e*f) + d*g)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(
f + g*x))/(e*f - d*g)] + 3*Log[d + e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f)
+ d*g)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyL
og[4, (g*(d + e*x))/(-(e*f) + d*g)]))/g
```

Maple [C] time = 0.194, size = 9538, normalized size = 60.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3 \log\left(gx+f\right)}{g} + \int \frac{b^3 \log\left(\left(ex+d\right)^n\right)^3 + b^3 \log\left(c\right)^3 + 3\,ab^2 \log\left(c\right)^2 + 3\,a^2 b \log\left(c\right) + 3\left(b^3 \log\left(c\right) + ab^2\right) \log\left(\left(ex+d\right)^n\right)^2}{gx+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] a^3*log(g*x + f)/g + integrate((b^3*log((e*x + d)^n)^3 + b^3*log(c)^3 + 3*a
*b^2*log(c)^2 + 3*a^2*b*log(c) + 3*(b^3*log(c) + a*b^2)*log((e*x + d)^n)^2
+ 3*(b^3*log(c)^2 + 2*a*b^2*log(c) + a^2*b)*log((e*x + d)^n))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^3 \log\left(\left(ex+d\right)^n c\right)^3 + 3\,ab^2 \log\left(\left(ex+d\right)^n c\right)^2 + 3\,a^2 b \log\left(\left(ex+d\right)^n c\right) + a^3}{gx+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b \log\left(c \left(d + ex\right)^n\right)\right)^3}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**3/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/(g*x + f), x)
```

3.232 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)(h+ix)}\,dx$

Optimal. Leaf size=372

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{gh-fi}+\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{gh-fi}+\frac{3bn\text{PolyLo}}{}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g
))])/(g*h - f*i) - (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((i*(d +
 e*x))/(e*h - d*i))])/(g*h - f*i) - (6*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) + (6*b^2*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i) + (
6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (6*b^3*n^
3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```

Rubi [A] time = 0.522207, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {2418, 2396, 2433, 2374, 2383, 6589}

$$-\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{gh-fi}+\frac{6b^2n^2\text{PolyLog}\left(3,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{gh-fi}+\frac{3bn\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)),x]
```


```
[Out] ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g*h - f*i) -
 ((a + b*Log[c*(d + e*x)^n])^3*Log[(e*(h + i*x))/(e*h - d*i)])/(g*h - f*i)
+ (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g
))])/(g*h - f*i) - (3*b*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((i*(d +
 e*x))/(e*h - d*i))])/(g*h - f*i) - (6*b^2*n^2*(a + b*Log[c*(d + e*x)^n])*P
olyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) + (6*b^2*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i) + (
6*b^3*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i) - (6*b^3*n^
3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(h+232x)(f+gx)}\,dx = \int \left(\frac{232\,(a+b\log(c(d+ex)^n))^3}{(232f-gh)(h+232x)} - \frac{g\,(a+b\log(c(d+ex)^n))^3}{(232f-gh)(f+gx)}\right) dx$$

$$= \frac{232\int \frac{(a+b\log(c(d+ex)^n))^3}{h+232x}\,dx}{232f-gh} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}\,dx}{232f-gh}$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{232f-gh} - (3$$

$$(3$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{232f-gh} -$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{232f-gh} - 3b$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{232f-gh} - 3b$$

$$= \frac{\log\left(-\frac{e(h+232x)}{232d-eh}\right)(a+b\log(c(d+ex)^n))^3}{232f-gh} - \frac{(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(f+gx)}{ef-dg}\right)}{232f-gh} - 3b$$

Mathematica [A] time = 0.430288, size = 599, normalized size = 1.61

$$6b^2n^2\left(a+b\log\left(c(d+ex)^n\right)-bn\log(d+ex)\right)\left(-\text{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)+\log(d+ex)\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\text{PolyLog}\left(3,\frac{i}{}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[f + g*x] - (a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log[h + i*x] + 3*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])^2*(Log[d + e*x]*(Log[(e*(f + g*x))/(e*f - d*g)
] - Log[(e*(h + i*x))/(e*h - d*i)]) + PolyLog[2, (g*(d + e*x))/(-(e*f) + d*
g)] - PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) + 6*b^2*n^2*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*((Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*
g)])/2 - (Log[d + e*x]^2*Log[(e*(h + i*x))/(e*h - d*i)])/2 + Log[d + e*x]*P
olyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - Log[d + e*x]*PolyLog[2, (i*(d + e
*x))/(-(e*h) + d*i)] - PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)] + PolyLog[3
, (i*(d + e*x))/(-(e*h) + d*i)]) + b^3*n^3*(Log[d + e*x]^3*Log[(e*(f + g*x)
)/(e*f - d*g)] - Log[d + e*x]^3*Log[(e*(h + i*x))/(e*h - d*i)] + 3*Log[d +
e*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 3*Log[d + e*x]^2*PolyLog[
2, (i*(d + e*x))/(-(e*h) + d*i)] - 6*Log[d + e*x]*PolyLog[3, (g*(d + e*x))/
(-(e*f) + d*g)] + 6*Log[d + e*x]*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)] +
 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)] - 6*PolyLog[4, (i*(d + e*x))/(-
(e*h) + d*i)]))/(g*h - f*i)
```

Maple [C] time = 2.11, size = 21696, normalized size = 58.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\frac{\log\left(gx+f\right)}{gh-fi}-\frac{\log\left(ix+h\right)}{gh-fi}\right)+\int\frac{b^3\log\left(\left(ex+d\right)^n\right)^3+b^3\log\left(c\right)^3+3\,ab^2\log\left(c\right)^2+3\,a^2b\log\left(c\right)+3\left(b^3\log\left(c\right)+ab^2\right)}{gix^2+fh+\left(gh+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="maxima")
```

```
[Out] a^3*(log(g*x + f)/(g*h - f*i) - log(i*x + h)/(g*h - f*i)) + integrate((b^3*
log((e*x + d)^n)^3 + b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2*b*log(c) + 3*(
b^3*log(c) + a*b^2)*log((e*x + d)^n)^2 + 3*(b^3*log(c)^2 + 2*a*b^2*log(c) +
 a^2*b)*log((e*x + d)^n))/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left((ex+d)^n c\right)^3+3\,ab^2\log\left((ex+d)^n c\right)^2+3\,a^2b\log\left((ex+d)^n c\right)+a^3}{gix^2+fh+\left(gh+fi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="fricas")
```

```
[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g*i*x^2 + f*h + (g*h + f*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)/(i*x+h),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{\left(gx+f\right)(ix+h)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/((g*x + f)*(i*x + h)), x)
```

3.233 $\int \frac{(a+b\log(c(d+ex)^n))^3}{(f+gx)(h+ix)^2}\,dx$

Optimal. Leaf size=602

$$\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{(eh-di)(gh-fi)}-\frac{6b^2gn^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^2}+\frac{6b^2gn^2\text{Pol}}{}$$

```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (3*b*e*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h
- d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e
*(h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (3*b*g*n*(a + b*Log[c*(d + e*x)^n
])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (6*b^2*e*n^2
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h
 - d*i)*(g*h - f*i)) - (3*b*g*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((
i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2 - (6*b^2*g*n^2*(a + b*Log[c*(d +
e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 - (6*b^3*e
*n^3*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) +
(6*b^2*g*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d
*i))])/(g*h - f*i)^2 + (6*b^3*g*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i)^2 - (6*b^3*g*n^3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(
g*h - f*i)^2
```

Rubi [A] time = 0.725129, antiderivative size = 602, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {2418, 2396, 2433, 2374, 2383, 6589, 2397}

$$\frac{6b^2en^2\text{PolyLog}\left(2,-\frac{i(d+ex)}{eh-di}\right)(a+b\log(c(d+ex)^n))}{(eh-di)(gh-fi)}-\frac{6b^2gn^2\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{(gh-fi)^2}+\frac{6b^2gn^2\text{Pol}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)^2),x]
```


```
[Out] -((i*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/((e*h - d*i)*(g*h - f*i)*(h +
i*x))) + (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(f + g*x))/(e*f - d*g)])/(g
*h - f*i)^2 + (3*b*e*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(h + i*x))/(e*h
- d*i)])/((e*h - d*i)*(g*h - f*i)) - (g*(a + b*Log[c*(d + e*x)^n])^3*Log[(e
*(h + i*x))/(e*h - d*i)])/(g*h - f*i)^2 + (3*b*g*n*(a + b*Log[c*(d + e*x)^n
])^2*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 + (6*b^2*e*n^2
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((i*(d + e*x))/(e*h - d*i))])/((e*h
 - d*i)*(g*h - f*i)) - (3*b*g*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((
i*(d + e*x))/(e*h - d*i))])/(g*h - f*i)^2 - (6*b^2*g*n^2*(a + b*Log[c*(d +
e*x)^n])*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/(g*h - f*i)^2 - (6*b^3*e
*n^3*PolyLog[3, -((i*(d + e*x))/(e*h - d*i))])/((e*h - d*i)*(g*h - f*i)) +
(6*b^2*g*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((i*(d + e*x))/(e*h - d
*i))])/(g*h - f*i)^2 + (6*b^3*g*n^3*PolyLog[4, -((g*(d + e*x))/(e*f - d*g))
])/(g*h - f*i)^2 - (6*b^3*g*n^3*PolyLog[4, -((i*(d + e*x))/(e*h - d*i))])/(
g*h - f*i)^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3}{(h+233x)^2(f+gx)}dx = \int \left(\frac{233(a+b\log(c(d+ex)^n))^3}{(233f-gh)(h+233x)^2} - \frac{233g(a+b\log(c(d+ex)^n))^3}{(233f-gh)^2(h+233x)} + \frac{g^2(a+b\log(c(d+e}{(233f-gh)^2(f+}\right.$$

$$= -\frac{(233g)\int \frac{(a+b\log(c(d+ex)^n))^3}{h+233x}dx}{(233f-gh)^2} + \frac{g^2\int \frac{(a+b\log(c(d+ex)^n))^3}{f+gx}dx}{(233f-gh)^2} + \frac{233\int \frac{(a+b\log(c(d+ex)^n))^3}{(h+233x)^2}dx}{233f-gh}$$

$$= -\frac{233(d+ex)(a+b\log(c(d+ex)^n))^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^3}{(233f-gh)^2} + \frac{g(}{}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c(d+ex)^n))^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g}{}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c(d+ex)^n))^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g}{}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c(d+ex)^n))^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g}{}$$

$$= \frac{3ben\log\left(-\frac{e(h+233x)}{233d-eh}\right)(a+b\log(c(d+ex)^n))^2}{(233d-eh)(233f-gh)} - \frac{233(d+ex)(a+b\log(c(d+ex)^n))^3}{(233d-eh)(233f-gh)(h+233x)} - \frac{g}{}$$

Mathematica [A] time = 1.43843, size = 1025, normalized size = 1.7

$$\frac{-b^3\left((gh-fi)\left(\left(i(d+ex)\log(d+ex)-3e(h+ix)\log\left(\frac{e(h+ix)}{eh-di}\right)\right)\log^2(d+ex)-6e(h+ix)\text{PolyLog}\left(2,\frac{i(d+ex)}{di-eh}\right)\log(d+ex)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3/((f + g*x)*(h + i*x)^2),x]
```

```
[Out] ((e*h - d*i)*(g*h - f*i)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3 +
g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^3*Log
[f + g*x] - g*(e*h - d*i)*(h + i*x)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^3*Log[h + i*x] - 3*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])
^2*((g*h - f*i)*(i*(d + e*x)*Log[d + e*x] - e*(h + i*x)*Log[h + i*x]) - g*(
e*h - d*i)*(h + i*x)*(Log[d + e*x]*Log[(e*(f + g*x))/(e*f - d*g)] + PolyLog
[2, (g*(d + e*x))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]*
Log[(e*(h + i*x))/(e*h - d*i)] + PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]))
 - 3*b^2*n^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((g*h - f*i)*(Lo
g[d + e*x]*(i*(d + e*x)*Log[d + e*x] - 2*e*(h + i*x)*Log[(e*(h + i*x))/(e*h
 - d*i)]) - 2*e*(h + i*x)*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]) - g*(e*
h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(f + g*x))/(e*f - d*g)] + 2*Log[d
 + e*x]*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*PolyLog[3, (g*(d + e*x
))/(-(e*f) + d*g)]) + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^2*Log[(e*(h + i
*x))/(e*h - d*i)] + 2*Log[d + e*x]*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)]
 - 2*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)])) - b^3*n^3*((g*h - f*i)*(Log
[d + e*x]^2*(i*(d + e*x)*Log[d + e*x] - 3*e*(h + i*x)*Log[(e*(h + i*x))/(e*
h - d*i)]) - 6*e*(h + i*x)*Log[d + e*x]*PolyLog[2, (i*(d + e*x))/(-(e*h) +
```

```
d*i)] + 6*e*(h + i*x)*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)]) - g*(e*h -
d*i)*(h + i*x)*(Log[d + e*x]^3*Log[(e*(f + g*x))/(e*f - d*g)] + 3*Log[d + e
*x]^2*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 6*Log[d + e*x]*PolyLog[3,
(g*(d + e*x))/(-(e*f) + d*g)] + 6*PolyLog[4, (g*(d + e*x))/(-(e*f) + d*g)])
 + g*(e*h - d*i)*(h + i*x)*(Log[d + e*x]^3*Log[(e*(h + i*x))/(e*h - d*i)] +
 3*Log[d + e*x]^2*PolyLog[2, (i*(d + e*x))/(-(e*h) + d*i)] - 6*Log[d + e*x]
*PolyLog[3, (i*(d + e*x))/(-(e*h) + d*i)] + 6*PolyLog[4, (i*(d + e*x))/(-(e
*h) + d*i)])))/((e*h - d*i)*(g*h - f*i)^2*(h + i*x))
```

Maple [F] time = 1.974, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}}{\left(gx+f\right)\left(ix+h\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x)

[Out] int((a+b*ln(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{3}\left(\frac{g\log\left(gx+f\right)}{g^{2}h^{2}-2\,fghi+f^{2}i^{2}}-\frac{g\log\left(ix+h\right)}{g^{2}h^{2}-2\,fghi+f^{2}i^{2}}+\frac{1}{gh^{2}-fhi+\left(ghi-fi^{2}\right)x}\right)+\int \frac{b^{3}\log\left(\left(ex+d\right)^{n}\right)^{3}+b^{3}\log\left(c\right)^{3}+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="maxima")

[Out] a^3*(g*log(g*x + f)/(g^2*h^2 - 2*f*g*h*i + f^2*i^2) - g*log(i*x + h)/(g^2*h
^2 - 2*f*g*h*i + f^2*i^2) + 1/(g*h^2 - f*h*i + (g*h*i - f*i^2)*x)) + integr
ate((b^3*log((e*x + d)^n)^3 + b^3*log(c)^3 + 3*a*b^2*log(c)^2 + 3*a^2*b*log
(c) + 3*(b^3*log(c) + a*b^2)*log((e*x + d)^n)^2 + 3*(b^3*log(c)^2 + 2*a*b^2
*log(c) + a^2*b)*log((e*x + d)^n))/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x
^2 + (g*h^2 + 2*f*h*i)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{3}\log\left(\left(ex+d\right)^{n}c\right)^{3}+3\,ab^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+3\,a^{2}b\log\left(\left(ex+d\right)^{n}c\right)+a^{3}}{gi^{2}x^{3}+fh^{2}+\left(2\,ghi+fi^{2}\right)x^{2}+\left(gh^{2}+2\,fhi\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="fricas")

[Out] integral((b^3*log((e*x + d)^n*c)^3 + 3*a*b^2*log((e*x + d)^n*c)^2 + 3*a^2*b
*log((e*x + d)^n*c) + a^3)/(g*i^2*x^3 + f*h^2 + (2*g*h*i + f*i^2)*x^2 + (g*
h^2 + 2*f*h*i)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3/(g*x+f)/(i*x+h)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3}{\left(gx+f\right)(ix+h)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3/(g*x+f)/(i*x+h)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3/((g*x + f)*(i*x + h)^2), x)
```

3.234 $\int \frac{h+ix}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=106

$$\frac{(gh-fi)\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)}{g}+\frac{ie^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{begn}$$

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*
n))*g*n*(c*(d + e*x)^n)^n^(-1)) + ((g*h - f*i)*Unintegrable[1/((f + g*x)*(a
 + b*Log[c*(d + e*x)^n])), x])/g
```

Rubi [A] time = 0.176109, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b*e*E^(a/(b*
n))*g*n*(c*(d + e*x)^n)^n^(-1)) + ((g*h - f*i)*Defer[Int][1/((f + g*x)*(a +
 b*Log[c*(d + e*x)^n])), x])/g
```

Rubi steps

$$\begin{aligned}
\int \frac{h+234x}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx &= \int \left(\frac{234}{g\left(a+b\log\left(c(d+ex)^n\right)\right)}+\frac{-234f+gh}{g(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\right)dx\\
&= \frac{234\int \frac{1}{a+b\log(c(d+ex)^n)}\,dx}{g}+\frac{(-234f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx}{g}\\
&= \frac{234\,\text{Subst}\left(\int \frac{1}{a+b\log(cx^n)}\,dx,x,d+ex\right)}{eg}+\frac{(-234f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n}}{g}\\
&= \frac{(-234f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx}{g}+\frac{\left(234(d+ex)\left(c(d+ex)^n\right)^{-1/n}\right)\text{Sub}}{eg}\\
&= \frac{234e^{-\frac{a}{bn}}(d+ex)\left(c(d+ex)^n\right)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{begn}+\frac{(-234f+gh)\int \frac{}{(f+gx)(}}{g}
\end{aligned}$$

Mathematica [A] time = 0.229699, size = 0, normalized size = 0.

$$\int \frac{h+ix}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 0.872, size = 0, normalized size = 0.

$$\int \frac{ix+h}{(gx+f)\left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{ix+h}{(gx+f)\left(b\log\left((ex+d)^{n}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate((i*x + h)/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ix+h}{agx+af+(bgx+bf)\log\left((ex+d)^{n}c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral((i*x + h)/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{h+ix}{\left(a+b\log\left(c\,(d+ex)^{n}\right)\right)(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral((h + i*x)/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{ix + h}{(gx + f)\left(b\log\left((ex + d)^n c\right) + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((i*x + h)/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

3.235 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi [A] time = 0.0367887, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]

[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx = \int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Mathematica [A] time = 0.0225545, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])),x]

[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 0.059, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(a+b\ln\left(c\,(ex+d)^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)

[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{agx+af+(bgx+bf)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g*x + a*f + (b*g*x + b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c(d+ex)^n\right)\right)(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)), x)
```

3.236 $\int \frac{1}{(f+gx)(h+ix)(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=78

$$\frac{g\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)}{gh-fi}-\frac{i\text{Unintegrable}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))},x\right)}{gh-fi}$$

```
[Out] (g*Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i) -
 (i*Unintegrable[1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)
```

Rubi [A] time = 0.189458, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (g*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i) - (
i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)
```

Rubi steps

$$\int \frac{1}{(h+236x)(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx = \int \left(\frac{236}{(236f-gh)(h+236x)\left(a+b\log\left(c(d+ex)^n\right)\right)}-\frac{}{(236f-gh)(f+}\right.$$

$$=\frac{236\int \frac{1}{(h+236x)(a+b\log(c(d+ex)^n))}\,dx}{236f-gh}-\frac{g\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx}{236f-gh}$$

Mathematica [A] time = 0.843848, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 1.563, size = 0, normalized size = 0.

$$\int \frac{1}{(ix+h)\left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)*(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{agix^2+afh+\left(agh+afi\right)x+\left(bgix^2+bfh+\left(bgh+bfi\right)x\right)\log\left((ex+d)^n c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g*i*x^2 + a*f*h + (a*g*h + a*f*i)*x + (b*g*i*x^2 + b*f*h + (b
*g*h + b*f*i)*x)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)\left(f+gx\right)(h+ix)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))*(f + g*x)*(h + i*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)*(b*log((e*x + d)^n*c) + a)), x)
```

3.237 $\int \frac{1}{(f+gx)(h+ix)^2(a+b\log(c(d+ex)^n))}\,dx$

Optimal. Leaf size=120

$$\frac{g^2\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))},x\right)}{(gh-fi)^2}-\frac{gi\text{Unintegrable}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))},x\right)}{(gh-fi)^2}-\frac{i\text{Unintegrable}\left(\frac{1}{(h+ix)^2(a+b\log(c}\right.}{gh-fi}$$

```
[Out] (g^2*Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)
^2 - (i*Unintegrable[1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x])/(g*h -
 f*i) - (g*i*Unintegrable[1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*
h - f*i)^2
```

Rubi [A] time = 0.233583, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)^2\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] (g^2*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i)^2
 - (i*Defer[Int][1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*i
) - (g*i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])), x])/(g*h - f*
i)^2
```

Rubi steps

$$\int \frac{1}{(h+237x)^2(f+gx)\,(a+b\log\left(c(d+ex)^n\right))}\,dx=\int \left(\frac{237}{(237f-gh)(h+237x)^2\,(a+b\log\left(c(d+ex)^n\right))}-\frac{}{(237f-gh)^2(h}\right.$$
$$=-\frac{(237g)\int \frac{1}{(h+237x)(a+b\log(c(d+ex)^n))}\,dx}{(237f-gh)^2}+\frac{g^2\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))}\,dx}{(237f-gh)^2}$$

Mathematica [A] time = 3.06919, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)(h+ix)^2\,(a+b\log\left(c(d+ex)^n\right))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])), x]
```

Maple [A] time = 1.711, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\left(ix+h\right)^2\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)^2\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)^2*(b*log((e*x + d)^n*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{agi^2x^3+afh^2+\left(2\,aghi+afi^2\right)x^2+\left(agh^2+2\,afhi\right)x+\left(bgi^2x^3+bfh^2+\left(2\,bghi+bfi^2\right)x^2+\left(bgh^2+2\,bf\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*g*i^2*x^3 + a*f*h^2 + (2*a*g*h*i + a*f*i^2)*x^2 + (a*g*h^2 +
2*a*f*h*i)*x + (b*g*i^2*x^3 + b*f*h^2 + (2*b*g*h*i + b*f*i^2)*x^2 + (b*g*h^
2 + 2*b*f*h*i)*x)*log((e*x + d)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)**2/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)^2\left(b\log\left((ex+d)^n c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)^2*(b*log((e*x + d)^n*c) + a)), x)
```

3.238 $\int \frac{h+ix}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=142

$$\frac{(gh-fi)\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2},x\right)}{g}+\frac{ie^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2egn^2}-\frac{i(d+e}{begn\,(a+b\log(}$$

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(
b*n))*g*n^2*(c*(d + e*x)^n)^n^(-1)) - (i*(d + e*x))/(b*e*g*n*(a + b*Log[c*(
d + e*x)^n])) + ((g*h - f*i)*Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*
x)^n])^2), x])/g
```

Rubi [A] time = 0.196317, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{h+ix}{(f+gx)\,(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (i*(d + e*x)*ExpIntegralEi[(a + b*Log[c*(d + e*x)^n])/(b*n)])/(b^2*e*E^(a/(
b*n))*g*n^2*(c*(d + e*x)^n)^n^(-1)) - (i*(d + e*x))/(b*e*g*n*(a + b*Log[c*(
d + e*x)^n])) + ((g*h - f*i)*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)
^n])^2), x])/g
```

Rubi steps

$$\begin{aligned}
\int \frac{h+238x}{(f+gx)\,(a+b\log(c(d+ex)^n))^2}\,dx &= \int \left(\frac{238}{g\,(a+b\log(c(d+ex)^n))^2}+\frac{-238f+gh}{g(f+gx)\,(a+b\log(c(d+ex)^n))^2}\right)dx\\
&= \frac{238\int \frac{1}{(a+b\log(c(d+ex)^n))^2}\,dx}{g}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx}{g}\\
&= \frac{238\,\text{Subst}\left(\int \frac{1}{(a+b\log(cx^n))^2}\,dx,x,d+ex\right)}{eg}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n}}{g}\\
&= -\frac{238(d+ex)}{begn\,(a+b\log(c(d+ex)^n))}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx}{g}+\frac{23}{}\\
&= -\frac{238(d+ex)}{begn\,(a+b\log(c(d+ex)^n))}+\frac{(-238f+gh)\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx}{g}+\frac{(2}{}\\
&= \frac{238e^{-\frac{a}{bn}}(d+ex)(c(d+ex)^n)^{-1/n}\text{Ei}\left(\frac{a+b\log(c(d+ex)^n)}{bn}\right)}{b^2egn^2}-\frac{238(d+ex)}{begn\,(a+b\log(c(d+ex}
\end{aligned}$$

Mathematica [A] time = 1.19359, size = 0, normalized size = 0.

$$\int \frac{h+ix}{(f+gx)\,(a+b\log(c(d+ex)^n))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[(h + i*x)/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A] time = 2.901, size = 0, normalized size = 0.

$$\int \frac{ix+h}{\left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{eix^2+dh+(eh+di)x}{b^2efn\log(c)+abefn+\left(b^2egn\log(c)+abegn\right)x+\left(b^2egnx+b^2efn\right)\log\left((ex+d)^n\right)}+\int\frac{}{b^2ef^2n\log(c)+abef^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*i*x^2 + d*h + (e*h + d*i)*x)/(b^2*e*f*n*log(c) + a*b*e*f*n + (b^2*e*g*n
*log(c) + a*b*e*g*n)*x + (b^2*e*g*n*x + b^2*e*f*n)*log((e*x + d)^n)) + inte
grate((e*g*i*x^2 + 2*e*f*i*x + e*f*h - (g*h - f*i)*d)/(b^2*e*f^2*n*log(c) +
 a*b*e*f^2*n + (b^2*e*g^2*n*log(c) + a*b*e*g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(
c) + a*b*e*f*g*n)*x + (b^2*e*g^2*n*x^2 + 2*b^2*e*f*g*n*x + b^2*e*f^2*n)*log
((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{ix+h}{a^2gx+a^2f+\left(b^2gx+b^2f\right)\log\left((ex+d)^nc\right)^2+2\left(abgx+abf\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral((i*x + h)/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((e*x + d)^n*c)^
2 + 2*(a*b*g*x + a*b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{h+ix}{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)^{2}\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral((h + i*x)/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{ix + h}{(gx + f)\left(b\log\left((ex + d)^n c\right) + a\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((i*x+h)/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((i*x + h)/((g*x + f)*(b*log((e*x + d)^n*c) + a)^2), x)
```

3.239 $\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=26

$$\text{Unintegrable}\left(\frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi [A] time = 0.0338843, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Rubi steps

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx=\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Mathematica [A] time = 0.0770108, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$(ef-dg)\int \frac{1}{b^2ef^2n\log(c)+abef^2n+\left(b^2eg^2n\log(c)+abeg^2n\right)x^2+2\left(b^2efgn\log(c)+abefgn\right)x+\left(b^2eg^2nx^2+2\,b^2ef\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] (e*f - d*g)*integrate(1/(b^2*e*f^2*n*log(c) + a*b*e*f^2*n + (b^2*e*g^2*n*lo
g(c) + a*b*e*g^2*n)*x^2 + 2*(b^2*e*f*g*n*log(c) + a*b*e*f*g*n)*x + (b^2*e*g
^2*n*x^2 + 2*b^2*e*f*g*n*x + b^2*e*f^2*n)*log((e*x + d)^n)), x) - (e*x + d)
/(b^2*e*f*n*log(c) + a*b*e*f*n + (b^2*e*g*n*log(c) + a*b*e*g*n)*x + (b^2*e*
g*n*x + b^2*e*f*n)*log((e*x + d)^n))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2gx+a^2f+\left(b^2gx+b^2f\right)\log\left((ex+d)^nc\right)^2+2\left(abgx+abf\right)\log\left((ex+d)^nc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g*x + a^2*f + (b^2*g*x + b^2*f)*log((e*x + d)^n*c)^2 + 2*(a
*b*g*x + a*b*f)*log((e*x + d)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2\left(f+gx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Integral(1/((a + b*log(c*(d + e*x)**n))**2*(f + g*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(gx+f\right)\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(b*log((e*x + d)^n*c) + a)^2), x)
```

3.240 $\int \frac{1}{(f+gx)(h+ix)(a+b\log(c(d+ex)^n))^2}\,dx$

Optimal. Leaf size=78

$$\frac{g\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2},x\right)}{gh-fi}-\frac{i\text{Unintegrable}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))^2},x\right)}{gh-fi}$$

```
[Out] (g*Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
 - (i*Unintegrable[1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f
*i)
```

Rubi [A] time = 0.182707, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (g*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i) -
 (i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
```

Rubi steps

$$\int \frac{1}{(h+240x)(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx = \int \left(\frac{240}{(240f-gh)(h+240x)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}-\frac{}{(240f-gh}\right.$$

$$=\frac{240\int \frac{1}{(h+240x)(a+b\log(c(d+ex)^n))^2}\,dx}{240f-gh}-\frac{g\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}\,dx}{240f-gh}$$

Mathematica [A] time = 12.6754, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)(h+ix)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A] time = 15.503, size = 0, normalized size = 0.

$$\int \frac{1}{(ix+h)\left(gx+f\right)\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{ex+d}{b^2efhn\log(c)+abefhn+\left(b^2egin\log(c)+abegin\right)x^2+\left(\left(ghn+fin\right)b^2e\log(c)+\left(ghn+fin\right)abe\right)x+\left(b^2eginx^2+b^2e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x + d)/(b^2*e*f*h*n*log(c) + a*b*e*f*h*n + (b^2*e*g*i*n*log(c) + a*b*e*
g*i*n)*x^2 + ((g*h*n + f*i*n)*b^2*e*log(c) + (g*h*n + f*i*n)*a*b*e)*x + (b^
2*e*g*i*n*x^2 + b^2*e*f*h*n + (g*h*n + f*i*n)*b^2*e*x)*log((e*x + d)^n)) -
integrate((e*g*i*x^2 + 2*d*g*i*x - e*f*h + (g*h + f*i)*d)/(b^2*e*f^2*h^2*n*
log(c) + a*b*e*f^2*h^2*n + (b^2*e*g^2*i^2*n*log(c) + a*b*e*g^2*i^2*n)*x^4 +
 2*((g^2*h*i*n + f*g*i^2*n)*b^2*e*log(c) + (g^2*h*i*n + f*g*i^2*n)*a*b*e)*x
^3 + ((g^2*h^2*n + 4*f*g*h*i*n + f^2*i^2*n)*b^2*e*log(c) + (g^2*h^2*n + 4*f
*g*h*i*n + f^2*i^2*n)*a*b*e)*x^2 + 2*((f*g*h^2*n + f^2*h*i*n)*b^2*e*log(c)
+ (f*g*h^2*n + f^2*h*i*n)*a*b*e)*x + (b^2*e*g^2*i^2*n*x^4 + b^2*e*f^2*h^2*n
 + 2*(g^2*h*i*n + f*g*i^2*n)*b^2*e*x^3 + (g^2*h^2*n + 4*f*g*h*i*n + f^2*i^2
*n)*b^2*e*x^2 + 2*(f*g*h^2*n + f^2*h*i*n)*b^2*e*x)*log((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2gix^2+a^2fh+\left(b^2gix^2+b^2fh+\left(b^2gh+b^2fi\right)x\right)\log\left((ex+d)^nc\right)^2+\left(a^2gh+a^2fi\right)x+2\left(abgix^2+abfh+\left(a\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*g*i*x^2 + a^2*f*h + (b^2*g*i*x^2 + b^2*f*h + (b^2*g*h + b^2
*f*i)*x)*log((e*x + d)^n*c)^2 + (a^2*g*h + a^2*f*i)*x + 2*(a*b*g*i*x^2 + a*
b*f*h + (a*b*g*h + a*b*f*i)*x)*log((e*x + d)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)\left(b\log\left((ex+d)^n c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)*(b*log((e*x + d)^n*c) + a)^2), x)
```

3.241 $\int \frac{1}{(f+gx)(h+ix)^2(a+b\log(c(d+ex)^n))^2} dx$

Optimal. Leaf size=120

$$\frac{g^2\text{Unintegrable}\left(\frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2},x\right)}{(gh-fi)^2}-\frac{gi\text{Unintegrable}\left(\frac{1}{(h+ix)(a+b\log(c(d+ex)^n))^2},x\right)}{(gh-fi)^2}-\frac{i\text{Unintegrable}\left(\frac{1}{(h+ix)^2(a+b\log}\right.}{gh-fi}$$

```
[Out] (g^2*Unintegrable[1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*
i)^2 - (i*Unintegrable[1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x])/(g
*h - f*i) - (g*i*Unintegrable[1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x
])/(g*h - f*i)^2
```

Rubi [A] time = 0.224048, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] (g^2*Defer[Int][1/((f + g*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h - f*i)
^2 - (i*Defer[Int][1/((h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*h -
 f*i) - (g*i*Defer[Int][1/((h + i*x)*(a + b*Log[c*(d + e*x)^n])^2), x])/(g*
h - f*i)^2
```

Rubi steps

$$\int \frac{1}{(h+241x)^2(f+gx)\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx = \int \left(\frac{241}{(241f-gh)(h+241x)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2} - \frac{}{(241f-gh)^2}\right.$$

$$= -\frac{(241g)\int \frac{1}{(h+241x)(a+b\log(c(d+ex)^n))^2} dx}{(241f-gh)^2} + \frac{g^2\int \frac{1}{(f+gx)(a+b\log(c(d+ex)^n))^2}}{(241f-gh)^2}$$

Mathematica [A] time = 26.6407, size = 0, normalized size = 0.

$$\int \frac{1}{(f+gx)(h+ix)^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(h + i*x)^2*(a + b*Log[c*(d + e*x)^n])^2), x]
```

Maple [A] time = 21.281, size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)^2\left(a+b\ln\left(c(ex+d)^n\right)\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(1/(g*x+f)/(i*x+h)^2/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima
")
```

```
[Out] -(e*x + d)/(b^2*e*f*h^2*n*log(c) + a*b*e*f*h^2*n + (b^2*e*g*i^2*n*log(c) +
a*b*e*g*i^2*n)*x^3 + ((2*g*h*i*n + f*i^2*n)*b^2*e*log(c) + (2*g*h*i*n + f*i
^2*n)*a*b*e)*x^2 + ((g*h^2*n + 2*f*h*i*n)*b^2*e*log(c) + (g*h^2*n + 2*f*h*i
*n)*a*b*e)*x + (b^2*e*g*i^2*n*x^3 + b^2*e*f*h^2*n + (2*g*h*i*n + f*i^2*n)*b
^2*e*x^2 + (g*h^2*n + 2*f*h*i*n)*b^2*e*x)*log((e*x + d)^n)) - integrate((2*
e*g*i*x^2 - e*f*h + (g*h + 2*f*i)*d + (e*f*i + 3*d*g*i)*x)/(b^2*e*f^2*h^3*n
*log(c) + a*b*e*f^2*h^3*n + (b^2*e*g^2*i^3*n*log(c) + a*b*e*g^2*i^3*n)*x^5
+ ((3*g^2*h*i^2*n + 2*f*g*i^3*n)*b^2*e*log(c) + (3*g^2*h*i^2*n + 2*f*g*i^3*
n)*a*b*e)*x^4 + ((3*g^2*h^2*i*n + 6*f*g*h*i^2*n + f^2*i^3*n)*b^2*e*log(c) +
 (3*g^2*h^2*i*n + 6*f*g*h*i^2*n + f^2*i^3*n)*a*b*e)*x^3 + ((g^2*h^3*n + 6*f
*g*h^2*i*n + 3*f^2*h*i^2*n)*b^2*e*log(c) + (g^2*h^3*n + 6*f*g*h^2*i*n + 3*f
^2*h*i^2*n)*a*b*e)*x^2 + ((2*f*g*h^3*n + 3*f^2*h^2*i*n)*b^2*e*log(c) + (2*f
*g*h^3*n + 3*f^2*h^2*i*n)*a*b*e)*x + (b^2*e*g^2*i^3*n*x^5 + b^2*e*f^2*h^3*n
 + (3*g^2*h*i^2*n + 2*f*g*i^3*n)*b^2*e*x^4 + (3*g^2*h^2*i*n + 6*f*g*h*i^2*n
 + f^2*i^3*n)*b^2*e*x^3 + (g^2*h^3*n + 6*f*g*h^2*i*n + 3*f^2*h*i^2*n)*b^2*e
*x^2 + (2*f*g*h^3*n + 3*f^2*h^2*i*n)*b^2*e*x)*log((e*x + d)^n)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{}{a^2gi^2x^3 + a^2fh^2 + \left(2\,a^2ghi + a^2fi^2\right)x^2 + \left(b^2gi^2x^3 + b^2fh^2 + \left(2\,b^2ghi + b^2fi^2\right)x^2 + \left(b^2gh^2 + 2\,b^2fhi\right)x\right)\log}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas
")
```

```
[Out] integral(1/(a^2*g*i^2*x^3 + a^2*f*h^2 + (2*a^2*g*h*i + a^2*f*i^2)*x^2 + (b^
2*g*i^2*x^3 + b^2*f*h^2 + (2*b^2*g*h*i + b^2*f*i^2)*x^2 + (b^2*g*h^2 + 2*b^
2*f*h*i)*x)*log((e*x + d)^n*c)^2 + (a^2*g*h^2 + 2*a^2*f*h*i)*x + 2*(a*b*g*i
^2*x^3 + a*b*f*h^2 + (2*a*b*g*h*i + a*b*f*i^2)*x^2 + (a*b*g*h^2 + 2*a*b*f*h
*i)*x)*log((e*x + d)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)**2/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(gx+f)(ix+h)^2(b\log((ex+d)^n c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(i*x+h)^2/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((g*x + f)*(i*x + h)^2*(b*log((e*x + d)^n*c) + a)^2), x)
```

3.242 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=281

$$-\frac{bf^3n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}-\frac{f^3\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^4}-\frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^3(a+b\log(c}{3g}$$

```
[Out] (a*f^2*x)/g^3 - (b*f^2*n*x)/g^3 - (b*d*f*n*x)/(2*e*g^2) - (b*d^2*n*x)/(3*e^
2*g) + (b*f*n*x^2)/(4*g^2) + (b*d*n*x^2)/(6*e*g) - (b*n*x^3)/(9*g) + (b*d^2
*f*n*Log[d + e*x])/(2*e^2*g^2) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) + (b*f^2*
(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) - (f*x^2*(a + b*Log[c*(d + e*x)^n]))/
(2*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) - (f^3*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 - (b*f^3*n*PolyLog[2, -((g*(d +
 e*x))/(e*f - d*g))])/g^4
```

Rubi [A] time = 0.277652, antiderivative size = 281, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32, Rules used = {43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$-\frac{bf^3n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}-\frac{f^3\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^4}-\frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2}+\frac{x^3(a+b\log(c}{3g}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```


```
[Out] (a*f^2*x)/g^3 - (b*f^2*n*x)/g^3 - (b*d*f*n*x)/(2*e*g^2) - (b*d^2*n*x)/(3*e^
2*g) + (b*f*n*x^2)/(4*g^2) + (b*d*n*x^2)/(6*e*g) - (b*n*x^3)/(9*g) + (b*d^2
*f*n*Log[d + e*x])/(2*e^2*g^2) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) + (b*f^2*
(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) - (f*x^2*(a + b*Log[c*(d + e*x)^n]))/
(2*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) - (f^3*(a + b*Log[c*(d + e
*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 - (b*f^3*n*PolyLog[2, -((g*(d +
 e*x))/(e*f - d*g))])/g^4
```


Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx}\,dx = \int\left(\frac{f^2(a+b\log(c(d+ex)^n))}{g^3} - \frac{fx(a+b\log(c(d+ex)^n))}{g^2} + \frac{x^2(a+b\log(c(d+ex)^n)}{g}\right.$$

$$= \frac{f^2\int(a+b\log(c(d+ex)^n))\,dx}{g^3} - \frac{f^3\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^3} - \frac{f\int x(a+b\log(c(d+ex)^n}{g^2}$$

$$= \frac{af^2x}{g^3} - \frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2} + \frac{x^3(a+b\log(c(d+ex)^n))}{3g} - \frac{f^3(a+b\log(c(d+}{g}$$

$$= \frac{af^2x}{g^3} - \frac{fx^2(a+b\log(c(d+ex)^n))}{2g^2} + \frac{x^3(a+b\log(c(d+ex)^n))}{3g} - \frac{f^3(a+b\log(c(d+}{g}$$

$$= \frac{af^2x}{g^3} - \frac{bf^2nx}{g^3} - \frac{bdfnx}{2eg^2} - \frac{bd^2nx}{3e^2g} + \frac{bfnx^2}{4g^2} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^2fn\log(d+ex)}{2e^2g^2} + \frac{b}{}$$

Mathematica [A] time = 0.271081, size = 241, normalized size = 0.86

$$\frac{-36be^3f^3n\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+e\left(gx\left(6ae^2\left(6f^2-3fgx+2g^2x^2\right)-bn\left(12d^2g^2-6deg(gx-3f)+e^2\left(36f^2-9fgx+4\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (6*b*d^2*g^2*(3*e*f + 2*d*g)*n*Log[d + e*x] + e*(g*x*(6*a*e^2*(6*f^2 - 3*f*
g*x + 2*g^2*x^2) - b*n*(12*d^2*g^2 - 6*d*e*g*(-3*f + g*x) + e^2*(36*f^2 - 9
*f*g*x + 4*g^2*x^2))) - 36*a*e^2*f^3*Log[(e*(f + g*x))/(e*f - d*g)] + 6*b*e
*Log[c*(d + e*x)^n]*(6*d*f^2*g + e*g*x*(6*f^2 - 3*f*g*x + 2*g^2*x^2) - 6*e*
f^3*Log[(e*(f + g*x))/(e*f - d*g)])) - 36*b*e^3*f^3*n*PolyLog[2, (g*(d + e*
x))/(-(e*f) + d*g)])/(36*e^3*g^4)
```

Maple [C] time = 0.569, size = 1000, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] -1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^3-1/2*a/g^2*f*x^2-a*f^3/g^4*ln(g*x+f)
+1/3*b*ln(c)/g*x^3-49/36*b*n/g^4*f^3-1/2*b*ln((e*x+d)^n)/g^2*f*x^2+b*ln((e*
x+d)^n)/g^3*x*f^2+1/3*b/e^3*n/g*d^3*ln((g*x+f)*e+d*g-f*e)+b*n/g^4*f^3*ln(g*
x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/3*b/e^2*n/g^2*d^2*f-2/3*b/e*n/g^3*
d*f^2-b*ln((e*x+d)^n)*f^3/g^4*ln(g*x+f)+b*ln(c)/g^3*x*f^2-b*ln(c)*f^3/g^4*l
n(g*x+f)-1/2*b*ln(c)/g^2*f*x^2+b*n/g^4*f^3*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e
*f))+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*f*x^2-1
/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4*ln(g*x+f)+1/2*I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f^2+1/4*I*b*Pi*csgn(I*c*(
e*x+d)^n)^3/g^2*f*x^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4*ln
(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*x*f^2-1/4*I*b*Pi*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*x*f^2+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2/g*x^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*x*f^2+1/2*I*b*P
i*csgn(I*c*(e*x+d)^n)^3*f^3/g^4*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)*f^3/g^4*ln(g*x+f)+1/2*b/e^2*n/g^2*d^2*ln((g*x+f)*
e+d*g-f*e)*f+b/e*n/g^3*d*ln((g*x+f)*e+d*g-f*e)*f^2+1/3*b*ln((e*x+d)^n)/g*x^
3+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^3+1/3*a/g*x^3-1/4*I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x^2-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)/g*x^3-1/9*b*n*x^3/g+1/4*b*f*n*x^2/g^2+1/6*b*d*n*x^
2/e/g+a*f^2*x/g^3-1/3*b*d^2*n*x/e^2/g-b*f^2*n*x/g^3-1/2*b*d*f*n*x/e/g^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{6}a\left(\frac{6f^3\log\left(gx+f\right)}{g^4}-\frac{2g^2x^3-3fgx^2+6f^2x}{g^3}\right)+b\int\frac{x^3\log\left(\left(ex+d\right)^n\right)+x^3\log\left(c\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] -1/6*a*(6*f^3*log(g*x + f)/g^4 - (2*g^2*x^3 - 3*f*g*x^2 + 6*f^2*x)/g^3) + b
*integrate((x^3*log((e*x + d)^n) + x^3*log(c))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^n c\right)+ax^3}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral(x**3*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^3}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x + f), x)
```

3.243 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=181

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}-\frac{afx}{g^2}-\frac{bf(d+ex)}{}$$

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d
^2*n*Log[d + e*x])/(2*e^2*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) +
 (x^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*L
og[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e
*f - d*g))])/g^3
```

Rubi [A] time = 0.19333, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32, Rules used = {43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}-\frac{afx}{g^2}-\frac{bf(d+ex)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```


```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d
^2*n*Log[d + e*x])/(2*e^2*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) +
 (x^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*L
og[(e*(f + g*x))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e
*f - d*g))])/g^3
```


Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2 (a+b\log(c(d+ex)^n))}{f+gx}dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g^2}+\frac{x(a+b\log(c(d+ex)^n))}{g}+\frac{f^2(a+b\log(c(d+ex)^n)}{g^2(f+gx)}\right.$$

$$= -\frac{f\int(a+b\log(c(d+ex)^n))\,dx}{g^2}+\frac{f^2\int\frac{a+b\log(c(d+ex)^n)}{f+gx}dx}{g^2}+\frac{\int x(a+b\log(c(d+ex)^n)}{g}$$

$$= -\frac{afx}{g^2}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}+\frac{f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}-\frac{(bf)\int}{}$$

$$= -\frac{afx}{g^2}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}+\frac{f^2(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}-\frac{(bf)\,\mathrm{Su}}{}$$

$$= -\frac{afx}{g^2}+\frac{bfnx}{g^2}+\frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}-\frac{bf(d+ex)\log(c(d+ex)^n)}{eg^2}+\frac{x^2(}{}$$

Mathematica [A] time = 0.13688, size = 170, normalized size = 0.94

$$\frac{bf^2n\mathrm{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}+\frac{f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{g^3}+\frac{x^2(a+b\log(c(d+ex)^n))}{2g}-\frac{afx}{g^2}-\frac{bf(d+ex)\mathrm{lo}}{eg}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 + (b*n*((2*d*x)/e - x^2 - (2*d^2*Log[d + e*x
])/e^2))/(4*g) - (b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) + (x^2*(a + b*L
```

```
og[c*(d + e*x)^n]))/(2*g) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x
))/(e*f - d*g)])/g^3 + (b*f^2*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/g
^3
```

Maple [C] time = 0.561, size = 724, normalized size = 4.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] 1/2*b*ln((e*x+d)^n)/g*x^2+a*f^2/g^3*ln(g*x+f)+1/2*b*ln(c)/g*x^2+5/4*b*n/g^3
*f^2-b*n/g^3*f^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*b/e^2*n/g*
d^2*ln((g*x+f)*e+d*g-f*e)+1/2*b/e*n/g^2*d*f+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3/g^2*f*x+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^2+b*ln(c)*
f^2/g^3*ln(g*x+f)-b*ln(c)/g^2*f*x-b*n/g^3*f^2*dilog(((g*x+f)*e+d*g-f*e)/(d*
g-e*f))+1/2*a/g*x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)/g^2*f*x-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^2+b*ln((e*x+d)^n)*f^2/g^3*
ln(g*x+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^2-1/2*I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3*ln(g*x+f)-b/e*n/g^2*d*ln
((g*x+f)*e+d*g-f*e)*f-b*ln((e*x+d)^n)/g^2*f*x-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n
)^3*f^2/g^3*ln(g*x+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)/g*x^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g
*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x+f)-1/2*I*b*
Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*f*x-1/2*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2/g^2*f*x-1/4*b*n*x^2/g+1/2*b*d*n*x/e/g-a*f*x/g^2+b*f*n*x/
g^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{2f^2\log\left(gx+f\right)}{g^3}+\frac{gx^2-2fx}{g^2}\right)+b\int\frac{x^2\log\left((ex+d)^n\right)+x^2\log\left(c\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(2*f^2*log(g*x + f)/g^3 + (g*x^2 - 2*f*x)/g^2) + b*integrate((x^2*log
((e*x + d)^n) + x^2*log(c))/(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^n c\right)+ax^2}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 \left(a + b \log \left(c \left(d + ex\right)^n\right)\right)}{f + gx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral(x**2*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log \left((ex + d)^n c\right) + a\right)x^2}{gx + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x + f), x)
```

3.244 $\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx}\,dx$

Optimal. Leaf size=104

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{ax}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{bnx}{g}$$

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) - (f*(a + b*Lo
g[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 - (b*f*n*PolyLog[2, -
((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rubi [A] time = 0.130702, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {43, 2416, 2389, 2295, 2394, 2393, 2391}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}-\frac{f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}+\frac{ax}{g}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg}-\frac{bnx}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) - (f*(a + b*Lo
g[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 - (b*f*n*PolyLog[2, -
((g*(d + e*x))/(e*f - d*g))])/g^2
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{g} - \frac{f(a+b\log(c(d+ex)^n))}{g(f+gx)}\right) dx$$
$$= \frac{\int (a+b\log(c(d+ex)^n))\,dx}{g} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g}$$
$$= \frac{ax}{g} - \frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{b\int \log(c(d+ex)^n)\,dx}{g} + \frac{(befn)\int \frac{\log\left(\frac{e(f}{ef}\right.}{d+e}}{g^2}$$
$$= \frac{ax}{g} - \frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} + \frac{b\,\mathrm{Subst}\left(\int \log(cx^n)\,dx, x, d+ex\right)}{eg} + \frac{(bf}{}$$
$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} - \frac{f(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} - \frac{bfn\mathrm{L}}{}$$

Mathematica [A] time = 0.0719131, size = 95, normalized size = 0.91

$$\frac{-bfn\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right) - f\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n)) + agx + \frac{bg(d+ex)\log(c(d+ex)^n)}{e} - bgnx}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x),x]
```

```
[Out] (a*g*x - b*g*n*x + (b*g*(d + e*x)*Log[c*(d + e*x)^n])/e - f*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - b*f*n*PolyLog[2, (g*(d + e*x))
/(-(e*f) + d*g)])/g^2
```

Maple [C] time = 0.588, size = 463, normalized size = 4.5

$$\frac{b\ln\left((ex+d)^n\right)x}{g} - \frac{b\ln\left((ex+d)^n\right)f\ln\left(gx+f\right)}{g^2} - \frac{bnx}{g} - \frac{bnf}{g^2} + \frac{bdn\ln\left(\left(gx+f\right)e+dg-fe\right)}{eg} + \frac{bnf}{g^2}\mathrm{dilog}\left(\frac{\left(gx+f\right)e}{dg-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] b*ln((e*x+d)^n)/g*x-b*ln((e*x+d)^n)*f/g^2*ln(g*x+f)-b*n*x/g-b*n/g^2*f+b/e*n
/g*d*ln((g*x+f)*e+d*g-f*e)+b*n/g^2*f*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+b
*n/g^2*f*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
*f/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
/g*x+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(
e*x+d)^n)^3/g*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x-1/2*I*b*Pi*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x+f)+b*ln(c)/g*x-b*ln(c)*
f/g^2*ln(g*x+f)+a*x/g-a*f/g^2*ln(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{x}{g}-\frac{f\log\left(gx+f\right)}{g^2}\right)+b\int\frac{x\log\left(\left(ex+d\right)^n\right)+x\log\left(c\right)}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*(x/g - f*log(g*x + f)/g^2) + b*integrate((x*log((e*x + d)^n) + x*log(c))/
(g*x + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx\log\left(\left(ex+d\right)^n c\right)+ax}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*x*log((e*x + d)^n*c) + a*x)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x/(g*x + f), x)
```

3.245 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx$

Optimal. Leaf size=63

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rubi [A] time = 0.0476132, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log\left(c(d+ex)^n\right))}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, -((g*(d + e*x))/(e*f - d*g))])/g
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log (c(d+ex)^n)}{f+gx}\,dx = \frac{(a+b\log (c(d+ex)^n))\log \left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}dx}{g}$$

$$= \frac{(a+b\log (c(d+ex)^n))\log \left(\frac{e(f+gx)}{ef-dg}\right)}{g} - \frac{(bn)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{gx}{ef-dg}\right)}{x}dx, x, d+ex\right)}{g}$$

$$= \frac{(a+b\log (c(d+ex)^n))\log \left(\frac{e(f+gx)}{ef-dg}\right)}{g} + \frac{bn\text{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{g}$$

Mathematica [A] time = 0.0067018, size = 62, normalized size = 0.98

$$\frac{bn\text{PolyLog}\left(2, \frac{g(d+ex)}{dg-ef}\right)}{g} + \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log (c(d+ex)^n))}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g + (b*n*PolyLo
g[2, (g*(d + e*x))/(-(e*f) + d*g)])/g
```

Maple [C] time = 0.11, size = 261, normalized size = 4.1

$$\frac{b\ln\left(gx+f\right)\ln\left((ex+d)^n\right)}{g} - \frac{bn}{g}\text{dilog}\left(\frac{\left(gx+f\right)e+dg-fe}{dg-fe}\right) - \frac{bn\ln\left(gx+f\right)}{g}\ln\left(\frac{\left(gx+f\right)e+dg-fe}{dg-fe}\right) - \frac{i}{2}\ln\left(gx+f\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f),x)
```

```
[Out] b*ln(g*x+f)/g*ln((e*x+d)^n)-b/g*n*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b/g*
n*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(g*x+f)/g*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(g*x+f)/g*b*ln(c)+
a*ln(g*x+f)/g
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{gx+f}\,dx + \frac{a\log\left(gx+f\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(g*x + f), x) + a*log(g*x + f)/g
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^nc\right)+a}{gx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c\left(d+ex\right)^n\right)}{f+gx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left((ex+d)^nc\right)+a}{gx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x + f), x)
```

3.246 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)}\,dx$

Optimal. Leaf size=107

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{f}+\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+$$

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(f + g*x))/(e*f - d*g)])/f - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f
- d*g))])/f + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rubi [A] time = 0.1437, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32, Rules used = {36, 29, 31, 2416, 2394, 2315, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{f}+\frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(f + g*x))/(e*f - d*g)])/f - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f
- d*g))])/f + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g(a+b\log(c(d+ex)^n))}{f(f+gx)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f} - \frac{(ben)\int \frac{\log(-}{d+e}}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f} + \frac{bn\text{Li}_2\left(1+\frac{e}{d}\right.}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{f} - \frac{bn\text{Li}_2\left(-\frac{g(d+}{ef-}\right.}{f}$$

Mathematica [A] time = 0.0373871, size = 85, normalized size = 0.79

$$\frac{-bn\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)+\left(\log\left(-\frac{ex}{d}\right)-\log\left(\frac{e(f+gx)}{ef-dg}\right)\right)(a+b\log(c(d+ex)^n))}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[-((e*x)/d)] - Log[(e*(f + g*x))/(e*f - d*g
)]) - b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] + b*n*PolyLog[2, 1 + (e*
x)/d])/f
```

Maple [C] time = 0.515, size = 455, normalized size = 4.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x+f),x)
```

```
[Out] -b*ln((e*x+d)^n)/f*ln(g*x+f)+b*ln((e*x+d)^n)/f*ln(x)-b*n/f*dilog((e*x+d)/d)
-b*n/f*ln(x)*ln((e*x+d)/d)+b*n/f*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+b*n/f
*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*ln(
x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)+1/2*I*b*Pi*csgn(I*c*(
e*x+d)^n)^3/f*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)/f*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln
(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x+f)+1/2*I*b*Pi*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)-b*ln(c)/f*ln(g*x+f)+b*ln(c)/
f*ln(x)-a/f*ln(g*x+f)+a/f*ln(x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-a\left(\frac{\log\left(gx+f\right)}{f}-\frac{\log\left(x\right)}{f}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log\left(c\right)}{gx^2+fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="maxima")
```

```
[Out] -a*(log(g*x + f)/f - log(x)/f) + b*integrate((log((e*x + d)^n) + log(c))/(g
*x^2 + f*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^2+fx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^2 + f*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*x), x)
```

3.247 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)}\,dx$

Optimal. Leaf size=162

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(}{f^2}$$

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) - (g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^2 + (b*g*n*PolyLog[2,
 -((g*(d + e*x))/(e*f - d*g))])/f^2 - (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rubi [A] time = 0.191103, antiderivative size = 162, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2}+\frac{g\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)),x]
```


```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) - (g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^2 + (b*g*n*PolyLog[2,
 -((g*(d + e*x))/(e*f - d*g))])/f^2 - (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```


Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
```

```
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx^2} - \frac{g(a+b\log(c(d+ex)^n))}{f^2x} + \frac{g^2(a+b\log(c(d+ex)^n))}{f^2(f+gx)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} + \frac{g(a+b\log(c(d+ex)^n))}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} + \frac{g(a+b\log(c(d+ex)^n))}{f^2}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)}{f^2}$$

Mathematica [A] time = 0.0835287, size = 141, normalized size = 0.87

$$\frac{bgn\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right) - bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right) + g\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n)) - \frac{f(a+b\log(c(d+ex)^n))}{x} - g\log}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)),x]
```

```
[Out] ((b*e*f*n*(Log[x] - Log[d + e*x]))/d - (f*(a + b*Log[c*(d + e*x)^n]))/x - g
*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + g*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(f + g*x))/(e*f - d*g)] + b*g*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d
*g)] - b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Maple [C] time = 0.547, size = 669, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x+f),x)
```

```
[Out] b*e*n*ln(x)/d/f-b*e*n*ln(e*x+d)/d/f-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2/f^2*g*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/
f^2*g*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/
f^2*g*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/x+1/2*I*b*Pi*csgn(
I*c*(e*x+d)^n)^3/f/x-b*n/f^2*g*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+b*n/f^2
*g*dilog((e*x+d)/d)+b*ln(c)/f^2*g*ln(g*x+f)-b*ln(c)/f^2*g*ln(x)-b*ln((e*x+d
)^n)/f/x-b*n/f^2*g*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+b*n/f^2*g*ln
(x)*ln((e*x+d)/d)-a/f/x+a/f^2*g*ln(g*x+f)-a/f^2*g*ln(x)-b*ln(c)/f/x+1/2*I*b
*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x+1/2*I*b*Pi*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^
2*g*ln(x)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x+f
)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)-1/2*I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)
^3/f^2*g*ln(g*x+f)+b*ln((e*x+d)^n)/f^2*g*ln(g*x+f)-b*ln((e*x+d)^n)/f^2*g*ln
(x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{g\log\left(gx+f\right)}{f^2}-\frac{g\log\left(x\right)}{f^2}-\frac{1}{fx}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{gx^3+fx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="maxima")
```

```
[Out] a*(g*log(g*x + f)/f^2 - g*log(x)/f^2 - 1/(f*x)) + b*integrate((log((e*x + d
)^n) + log(c))/(g*x^3 + f*x^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left(\left(ex+d\right)^n c\right)+a}{gx^3+fx^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^3 + f*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log\left((ex+d)^n c\right) + a}{(gx+f)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*x^2), x)
```

3.248 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)}\,dx$

Optimal. Leaf size=250

$$-\frac{bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}+\frac{bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}+\frac{g^2\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^3}-\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{f^3}$$

```
[Out] -(b*e*n)/(2*d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) - (b*e*g*n*Log[x])/(d*f^2)
+ (b*e^2*n*Log[d + e*x])/(2*d^2*f) + (b*e*g*n*Log[d + e*x])/(d*f^2) - (a +
b*Log[c*(d + e*x)^n])/(2*f*x^2) + (g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x) +
(g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 - (g^2*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 - (b*g^2*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/f^3 + (b*g^2*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rubi [A] time = 0.252184, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$-\frac{bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}+\frac{bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}+\frac{g^2\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^3}-\frac{g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)),x]
```


```
[Out] -(b*e*n)/(2*d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) - (b*e*g*n*Log[x])/(d*f^2)
+ (b*e^2*n*Log[d + e*x])/(2*d^2*f) + (b*e*g*n*Log[d + e*x])/(d*f^2) - (a +
b*Log[c*(d + e*x)^n])/(2*f*x^2) + (g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x) +
(g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 - (g^2*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 - (b*g^2*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/f^3 + (b*g^2*n*PolyLog[2, 1 + (e*x)/d])/f^3
```


Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3(f+gx)}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^3} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x^2} + \frac{g^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x} - \frac{g^3$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} - \frac{g^3\int \frac{a+b\log(c(d+e}{f+gx}}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.}{f^3}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2fx^2} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right.\right.}{f^3}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} - \frac{begn\log(x)}{df^2} + \frac{be^2n\log(d+ex)}{2d^2f} + \frac{begn\log(d+ex)}{df^2} - \frac{a+b\log}{2}$$

Mathematica [A] time = 0.217512, size = 208, normalized size = 0.83

$$-\frac{2bg^2n\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-2bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)+\frac{f^2(a+b\log(c(d+ex)^n))}{x^2}+2g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))-}{2f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)),x]
```

```
[Out] -((2*b*e*f*g*n*(Log[x] - Log[d + e*x]))/d + (b*e*f^2*n*(d + e*x*Log[x] - e*
x*Log[d + e*x]))/(d^2*x) + (f^2*(a + b*Log[c*(d + e*x)^n]))/x^2 - (2*f*g*(a
 + b*Log[c*(d + e*x)^n]))/x - 2*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^
n]) + 2*g^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 2*b
*g^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g^2*n*PolyLog[2, 1 +
(e*x)/d])/(2*f^3)
```

Maple [C] time = 0.533, size = 926, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x+f),x)
```

```
[Out] -1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2*n*ln(e*x+d)/d^2/f+1/2*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3/f^3*g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g^2*ln(x)
+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^2-1/2*a/f/x^2+1/2*I*b*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g^2*ln(g*x+f)-b*n/f^3*g^2*ln(x)*ln(
(e*x+d)/d)+b*n/f^3*g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-a/f^3*g^
2*ln(g*x+f)+a/f^3*g^2*ln(x)+a/f^2*g/x-1/2*b*ln(c)/f/x^2+b*ln(c)/f^2*g/x-b*n
/f^3*g^2*dilog((e*x+d)/d)+b*n/f^3*g^2*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-
b*ln(c)/f^3*g^2*ln(g*x+f)+b*ln(c)/f^3*g^2*ln(x)+b*ln((e*x+d)^n)/f^2*g/x-b*l
n((e*x+d)^n)/f^3*g^2*ln(g*x+f)-1/2*b*ln((e*x+d)^n)/f/x^2+1/2*I*b*Pi*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2/f^3*g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2/f^3*g^2*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/x+1/2
*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2*ln(x)+1/4*I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2/f^3*g^2*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/x-
1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2/f/x^2-1/2*b*e*n/d/f/x+b*ln((e*x+d)^n)/f^3*g^2*ln(x
)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g^2*ln(x)-
1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/x-b*e*g*n*
ln(x)/d/f^2+b*e*g*n*ln(e*x+d)/d/f^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}a\left(\frac{2g^2\log\left(gx+f\right)}{f^3}-\frac{2g^2\log\left(x\right)}{f^3}-\frac{2gx-f}{f^2x^2}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{gx^4+fx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="maxima")
```

```
[Out] -1/2*a*(2*g^2*log(g*x + f)/f^3 - 2*g^2*log(x)/f^3 - (2*g*x - f)/(f^2*x^2))
+ b*integrate((log((e*x + d)^n) + log(c))/(g*x^4 + f*x^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^4+fx^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^4 + f*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{(gx+f)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)*x^3), x)
```

3.249 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=265

$$\frac{3bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{f^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4(f+gx)}+\frac{3f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}+\frac{x^2\left(a+b\log\left(c(d\right.\right.}{2g^2}$$

```
[Out] (-2*a*f*x)/g^3 + (2*b*f*n*x)/g^3 + (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2)
- (b*d^2*n*Log[d + e*x])/(2*e^2*g^2) - (b*e*f^3*n*Log[d + e*x])/(g^4*(e*f -
 d*g)) - (2*b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) + (x^2*(a + b*Log[c*(
d + e*x)^n]))/(2*g^2) + (f^3*(a + b*Log[c*(d + e*x)^n]))/(g^4*(f + g*x)) +
(b*e*f^3*n*Log[f + g*x])/(g^4*(e*f - d*g)) + (3*f^2*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 + (3*b*f^2*n*PolyLog[2, -((g*(d + e
*x))/(e*f - d*g))])/g^4
```

Rubi [A] time = 0.260384, antiderivative size = 265, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {43, 2416, 2389, 2295, 2395, 36, 31, 2394, 2393, 2391}

$$\frac{3bf^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^4}+\frac{f^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4(f+gx)}+\frac{3f^2\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^4}+\frac{x^2\left(a+b\log\left(c(d\right.\right.}{2g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```


```
[Out] (-2*a*f*x)/g^3 + (2*b*f*n*x)/g^3 + (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2)
- (b*d^2*n*Log[d + e*x])/(2*e^2*g^2) - (b*e*f^3*n*Log[d + e*x])/(g^4*(e*f -
 d*g)) - (2*b*f*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^3) + (x^2*(a + b*Log[c*(
d + e*x)^n]))/(2*g^2) + (f^3*(a + b*Log[c*(d + e*x)^n]))/(g^4*(f + g*x)) +
(b*e*f^3*n*Log[f + g*x])/(g^4*(e*f - d*g)) + (3*f^2*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^4 + (3*b*f^2*n*PolyLog[2, -((g*(d + e
*x))/(e*f - d*g))])/g^4
```


Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3 (a + b \log (c(d + ex)^n))}{(f + gx)^2} dx = \int \left(-\frac{2f (a + b \log (c(d + ex)^n))}{g^3} + \frac{x (a + b \log (c(d + ex)^n))}{g^2} - \frac{f^3 (a + b \log (c(d + ex)^n}{g^3(f + gx)^2}\right.$$

$$= -\frac{(2f) \int (a + b \log (c(d + ex)^n)) \, dx}{g^3} + \frac{(3f^2) \int \frac{a+b \log(c(d+ex)^n)}{f+gx} dx}{g^3} - \frac{f^3 \int \frac{a+b \log(c(d+ex)^n)}{(f+gx)^2}}{g^3}$$

$$= -\frac{2afx}{g^3} + \frac{x^2 (a + b \log (c(d + ex)^n))}{2g^2} + \frac{f^3 (a + b \log (c(d + ex)^n))}{g^4(f + gx)} + \frac{3f^2 (a + b \log (c(d}{}$$

$$= -\frac{2afx}{g^3} + \frac{x^2 (a + b \log (c(d + ex)^n))}{2g^2} + \frac{f^3 (a + b \log (c(d + ex)^n))}{g^4(f + gx)} + \frac{3f^2 (a + b \log (c(d}{}$$

$$= -\frac{2afx}{g^3} + \frac{2bfnx}{g^3} + \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} - \frac{bd^2n \log(d + ex)}{2e^2g^2} - \frac{bef^3n \log(d + ex)}{g^4(ef - dg)} - \frac{2bf(d + e}{}$$

Mathematica [A] time = 0.324783, size = 220, normalized size = 0.83

$$\frac{12bf^2 n \mathrm{PolyLog}\left(2, \frac{g(d+ex)}{dg-ef}\right) + \frac{4f^3(a+b \log(c(d+ex)^n))}{f+gx} + 12f^2 \log\left(\frac{e(f+gx)}{ef-dg}\right)(a + b \log (c(d + ex)^n)) + 2g^2x^2 (a + b \log (c(d + ex}{4g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (-8*a*f*g*x + 8*b*f*g*n*x - (b*g^2*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]
))/e^2 - (8*b*f*g*(d + e*x)*Log[c*(d + e*x)^n])/e + 2*g^2*x^2*(a + b*Log[c*
(d + e*x)^n]) + (4*f^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - (4*b*e*f^3*n
*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 12*f^2*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 12*b*f^2*n*PolyLog[2, (g*(d + e*x))/(
-(e*f) + d*g)])/(4*g^4)
```

Maple [C] time = 0.565, size = 1063, normalized size = 4.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x)
```

```
[Out] 3*a/g^4*f^2*ln(g*x+f)+a*f^3/g^4/(g*x+f)+1/2*b*ln(c)/g^2*x^2-1/4*I*b*Pi*csgn
(I*c*(e*x+d)^n)^3/g^2*x^2+1/2*b/e*n/g^3*d*f-3*b*n/g^4*f^2*ln(g*x+f)*ln(((g*
x+f)*e+d*g-f*e)/(d*g-e*f))+9/4*b*n/g^4*f^2-3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3
/g^4*f^2*ln(g*x+f)-2*b*ln((e*x+d)^n)/g^3*f*x+3*b*ln((e*x+d)^n)/g^4*f^2*ln(g
*x+f)+b*ln((e*x+d)^n)*f^3/g^4/(g*x+f)+2*b*n/g^3/(d*g-e*f)*ln((g*x+f)*e+d*g-
f*e)*d*f^2+b*ln(c)*f^3/g^4/(g*x+f)-2*b*ln(c)/g^3*f*x+3*b*ln(c)/g^4*f^2*ln(g
*x+f)-3*b*n/g^4*f^2*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+1/2*b*ln((e*x+d)^n
)/g^2*x^2+1/2*a/g^2*x^2+b*e*n/g^4/(d*g-e*f)*ln((g*x+f)*e+d*g-f*e)*f^3-b*e*n
/g^4*f^3/(d*g-e*f)*ln(g*x+f)-1/2*b/e^2*n/g/(d*g-e*f)*ln((g*x+f)*e+d*g-f*e)*
d^3-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x^2+1/2*
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4/(g*x+f)+1/2*I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^3/g^4/(g*x+f)+3/2*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2/g^4*f^2*ln(g*x+f)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3
```

```
*f*x+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^4*f^2*ln(g*x+f)-I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^3*f*x-3/2*b/e*n/g^2/(d*g-e*
f)*ln((g*x+f)*e+d*g-f*e)*d^2*f-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^3/g^4/(g*
x+f)+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^3*f*x+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2/g^2*x^2+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x^
2-2*a*f*x/g^3-1/4*b*n*x^2/g^2+2*b*f*n*x/g^3-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)*f^3/g^4/(g*x+f)+1/2*b*d*n*x/e/g^2+I*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*f*x-3/2*I*b*Pi*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^4*f^2*ln(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(\frac{2 f^3}{g^5 x + f g^4} + \frac{6 f^2 \log\left(g x + f\right)}{g^4} + \frac{g x^2 - 4 f x}{g^3}\right) a + b \int \frac{x^3 \log\left((e x + d)^n\right) + x^3 \log\left(c\right)}{g^2 x^2 + 2 f g x + f^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*f^3/(g^5*x + f*g^4) + 6*f^2*log(g*x + f)/g^4 + (g*x^2 - 4*f*x)/g^3)*
a + b*integrate((x^3*log((e*x + d)^n) + x^3*log(c))/(g^2*x^2 + 2*f*g*x + f^
2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b x^3 \log\left((e x + d)^n c\right) + a x^3}{g^2 x^2 + 2 f g x + f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log\left((e x + d)^n c\right) + a\right) x^3}{\left(g x + f\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x + f)^2, x)
```

3.250 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=186

$$-\frac{2bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{ax}{g^2}+\frac{b(d+ex)}{}$$

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 + (b*e*f^2*n*Log[d + e*x])/(g^3*(e*f - d*g)) + (b*(
d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(g^
3*(f + g*x)) - (b*e*f^2*n*Log[f + g*x])/(g^3*(e*f - d*g)) - (2*f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 - (2*b*f*n*PolyLog[2,
-((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rubi [A] time = 0.203305, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {43, 2416, 2389, 2295, 2395, 36, 31, 2394, 2393, 2391}

$$-\frac{2bfn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^3}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{ax}{g^2}+\frac{b(d+ex)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 + (b*e*f^2*n*Log[d + e*x])/(g^3*(e*f - d*g)) + (b*(
d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(g^
3*(f + g*x)) - (b*e*f^2*n*Log[f + g*x])/(g^3*(e*f - d*g)) - (2*f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^3 - (2*b*f*n*PolyLog[2,
-((g*(d + e*x))/(e*f - d*g))])/g^3
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{(f+gx)^2}\,dx=\int\left(\frac{a+b\log\left(c(d+ex)^n\right)}{g^2}+\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)^2}-\frac{2f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)}\right)d$$

$$=\frac{\int\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx}{g^2}-\frac{(2f)\int\frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g^2}+\frac{f^2\int\frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{g^2}$$

$$=\frac{ax}{g^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+\frac{b\int\log(c(}{}$$

$$=\frac{ax}{g^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}-\frac{2f\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^3}+\frac{b\,\mathrm{Subst}\left(\right.}{}$$

$$=\frac{ax}{g^2}-\frac{bnx}{g^2}+\frac{bef^2n\log(d+ex)}{g^3(ef-dg)}+\frac{b(d+ex)\log\left(c(d+ex)^n\right)}{eg^2}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3(f+gx)}$$

Mathematica [A] time = 0.153424, size = 153, normalized size = 0.82

$$\frac{-2bfn\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-\frac{f^2(a+b\log(c(d+ex)^n))}{f+gx}-2f\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+agx+\frac{bg(d+ex)\log(c(d+ex)^n)}{e}+}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] (a*g*x - b*g*n*x + (b*g*(d + e*x)*Log[c*(d + e*x)^n])/e - (f^2*(a + b*Log[c
*(d + e*x)^n]))/(f + g*x) + (b*e*f^2*n*(Log[d + e*x] - Log[f + g*x]))/(e*f
- d*g) - 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - 2*
b*f*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^3
```

Maple [C] time = 0.566, size = 791, normalized size = 4.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x)
```

```
[Out] a*x/g^2-b*n*x/g^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x+I*b*Pi*csgn(I*c*(e
*x+d)^n)^3/g^3*f*ln(g*x+f)-2*a/g^3*f*ln(g*x+f)-a*f^2/g^3/(g*x+f)+b*ln(c)/g^
2*x-b*ln(c)*f^2/g^3/(g*x+f)-2*b*ln(c)/g^3*f*ln(g*x+f)+1/2*I*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2/g^2*x+2*b*n/g^3*f*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f)
)-b*ln((e*x+d)^n)*f^2/g^3/(g*x+f)-2*b*ln((e*x+d)^n)/g^3*f*ln(g*x+f)-b*n/g^2
/(d*g-e*f)*ln((g*x+f)*e+d*g-f*e)*d*f-b*e*n/g^3/(d*g-e*f)*ln((g*x+f)*e+d*g-f
*e)*f^2+b*e*n/g^3*f^2/(d*g-e*f)*ln(g*x+f)-b*n/g^3*f+2*b*n/g^3*f*ln(g*x+f)*l
n(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+b/e*n/g/(d*g-e*f)*ln((g*x+f)*e+d*g-f*e)*d^
2+b*ln((e*x+d)^n)/g^2*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)/g^2*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x+f)-I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^3*f*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x+f)-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2/g^3*f*ln(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2/g^2*x+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3/(g*x+f)+1/2*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3/(g*x+f)+I*b*Pi*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^3*f*ln(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-a\left(\frac{f^2}{g^4x+fg^3}-\frac{x}{g^2}+\frac{2f\log\left(gx+f\right)}{g^3}\right)+b\int\frac{x^2\log\left((ex+d)^n\right)+x^2\log\left(c\right)}{g^2x^2+2fgx+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] -a*(f^2/(g^4*x + f*g^3) - x/g^2 + 2*f*log(g*x + f)/g^3) + b*integrate((x^2*
log((e*x + d)^n) + x^2*log(c))/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^n c\right)+ax^2}{g^2x^2+2\,fgx+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^2}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x + f)^2, x)
```

3.251 $\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx$

Optimal. Leaf size=138

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{befn\log(d+ex)}{g^2(ef-dg)}+\frac{bef}{g}$$

```
[Out] -((b*e*f*n*Log[d + e*x])/(g^2*(e*f - d*g))) + (f*(a + b*Log[c*(d + e*x)^n])
)/(g^2*(f + g*x)) + (b*e*f*n*Log[f + g*x])/(g^2*(e*f - d*g)) + ((a + b*Log[
c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/g^2
```

Rubi [A] time = 0.152176, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {43, 2416, 2395, 36, 31, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{g^2}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2(f+gx)}+\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^2}-\frac{befn\log(d+ex)}{g^2(ef-dg)}+\frac{bef}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] -((b*e*f*n*Log[d + e*x])/(g^2*(e*f - d*g))) + (f*(a + b*Log[c*(d + e*x)^n])
)/(g^2*(f + g*x)) + (b*e*f*n*Log[f + g*x])/(g^2*(e*f - d*g)) + ((a + b*Log[
c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/g^2 + (b*n*PolyLog[2, -((g*
(d + e*x))/(e*f - d*g))])/g^2
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
```

```
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx)^2}\,dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g(f+gx)^2}+\frac{a+b\log(c(d+ex)^n)}{g(f+gx)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{g} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)} + \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} - \frac{(ben)\int \frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx}{g^2}$$

$$= \frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)} + \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{g^2} - \frac{(bn)\,\mathrm{Subst}\left(\int \frac{\log(1+}{x}\right.}{g^2}$$

$$= -\frac{befn\log(d+ex)}{g^2(ef-dg)} + \frac{f(a+b\log(c(d+ex)^n))}{g^2(f+gx)} + \frac{befn\log(f+gx)}{g^2(ef-dg)} + \frac{(a+b\log(c(d+e}{g}$$

Mathematica [A] time = 0.109138, size = 114, normalized size = 0.83

$$\frac{bn\,\mathrm{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+\frac{f(a+b\log(c(d+ex)^n))}{f+gx}-\frac{befn(\log(d+ex)-\log(f+gx))}{ef-dg}}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x)^2,x]
```

```
[Out] ((f*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - (b*e*f*n*(Log[d + e*x] - Log[f
+ g*x]))/(e*f - d*g) + (a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f -
```

```
d*g)] + b*n*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)])/g^2
```

Maple [C] time = 0.504, size = 519, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x)
```

```
[Out] b*ln((e*x+d)^n)/g^2*ln(g*x+f)+b*ln((e*x+d)^n)*f/g^2/(g*x+f)-b*n/g^2*dilog((
(g*x+f)*e+d*g-f*e)/(d*g-e*f))-b*n/g^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g
-e*f))+b*e*n/g^2*f/(d*g-e*f)*ln((g*x+f)*e+d*g-f*e)-b*e*n/g^2*f/(d*g-e*f)*ln
(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2/(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2/(g*x+
f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x+f)+1/2*I*b*Pi*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*ln(g*x+f)+b*ln(c)/g^2*ln(g*x+f)+b*ln(c)*f/g
^2/(g*x+f)+a/g^2*ln(g*x+f)+a*f/g^2/(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{f}{g^3x + fg^2} + \frac{\log\left(gx + f\right)}{g^2}\right) + b\int \frac{x\log\left((ex + d)^n\right) + x\log\left(c\right)}{g^2x^2 + 2\,fgx + f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] a*(f/(g^3*x + f*g^2) + log(g*x + f)/g^2) + b*integrate((x*log((e*x + d)^n)
+ x*log(c))/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx\log\left((ex + d)^n c\right) + ax}{g^2x^2 + 2\,fgx + f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x*log((e*x + d)^n*c) + a*x)/(g^2*x^2 + 2*f*g*x + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x}{\left(gx+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x/(g*x + f)^2, x)
```

3.252 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx$

Optimal. Leaf size=74

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

```
[Out] (b*e*n*Log[d + e*x])/(g*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(g*(f + g
*x)) - (b*e*n*Log[f + g*x])/(g*(e*f - d*g))
```

Rubi [A] time = 0.0284328, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {2395, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{ben\log(d+ex)}{g(ef-dg)}-\frac{ben\log(f+gx)}{g(ef-dg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(g*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(g*(f + g
*x)) - (b*e*n*Log[f + g*x])/(g*(e*f - d*g))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\log\left(c(d+ex)^n\right)}{(f+gx)^2}\,dx &= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx)}\,dx}{g}\\
&= -\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{(ben)\int \frac{1}{f+gx}\,dx}{ef-dg}+\frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{g(ef-dg)}\\
&= \frac{ben\log(d+ex)}{g(ef-dg)}-\frac{a+b\log\left(c(d+ex)^n\right)}{g(f+gx)}-\frac{ben\log(f+gx)}{g(ef-dg)}
\end{aligned}$$

Mathematica [A] time = 0.0657284, size = 57, normalized size = 0.77

$$\frac{\frac{ben(\log(d+ex)-\log(f+gx))}{ef-dg}-\frac{a+b\log(c(d+ex)^n)}{f+gx}}{g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x)^2,x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])/(f + g*x)) + (b*e*n*(Log[d + e*x] - Log[f + g
*x]))/(e*f - d*g))/g
```

Maple [C] time = 0.077, size = 354, normalized size = 4.8

$$-\frac{b\ln\left((ex+d)^n\right)}{g\left(gx+f\right)}-\frac{-i\pi bdg\operatorname{csgn}(ic)\operatorname{csgn}\left(i(ex+d)^n\right)\operatorname{csgn}\left(ic(ex+d)^n\right)-i\pi bef\operatorname{csgn}\left(i(ex+d)^n\right)\left(\operatorname{csgn}\left(ic(ex+d)^n\right)\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x+f)^2,x)
```

```
[Out] -b/g/(g*x+f)*ln((e*x+d)^n)-1/2*(-I*Pi*b*d*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)-I*Pi*b*e*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*
d*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d*g*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2+I*Pi*b*e*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*g*csgn(I*c*(e*x+d)^n)
^3+I*Pi*b*e*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e*f*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2+2*ln(e*x+d)*b*e*g*n*x-2*ln(-g*x-f)*b*e*g*n*x+
2*ln(e*x+d)*b*e*f*n-2*ln(-g*x-f)*b*e*f*n+2*ln(c)*b*d*g-2*ln(c)*b*e*f+2*a*d*
g-2*a*e*f)/(g*x+f)/g/(d*g-e*f)
```

Maxima [A] time = 1.15281, size = 115, normalized size = 1.55

$$ben\left(\frac{\log(ex+d)}{efg-dg^2}-\frac{\log\left(gx+f\right)}{efg-dg^2}\right)-\frac{b\log\left((ex+d)^n c\right)}{g^2x+fg}-\frac{a}{g^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] b*e*n*(log(e*x + d)/(e*f*g - d*g^2) - log(g*x + f)/(e*f*g - d*g^2)) - b*log
((e*x + d)^n*c)/(g^2*x + f*g) - a/(g^2*x + f*g)
```

Fricas [A] time = 1.78729, size = 215, normalized size = 2.91

$$-\frac{aef-adg-\left(begnx+bdgn\right)\log(ex+d)+\left(begnx+befn\right)\log\left(gx+f\right)+\left(bef-bdg\right)\log(c)}{ef^2g-dfg^2+\left(efg^2-dg^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] -(a*e*f - a*d*g - (b*e*g*n*x + b*d*g*n)*log(e*x + d) + (b*e*g*n*x + b*e*f*n
)*log(g*x + f) + (b*e*f - b*d*g)*log(c))/(e*f^2*g - d*f*g^2 + (e*f*g^2 - d*
g^3)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x+f)**2,x)
```

```
[Out] Exception raised: NotImplementedError
```

Giac [A] time = 1.28533, size = 150, normalized size = 2.03

$$\frac{bgnxe\log\left(gx+f\right)-bgnxe\log\left(xe+d\right)+bfne\log\left(gx+f\right)-bdgn\log\left(xe+d\right)-bdg\log\left(c\right)+bfe\log\left(c\right)-adg+af}{dg^3x-fg^2xe+dfg^2-f^2ge}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] (b*g*n*x*e*log(g*x + f) - b*g*n*x*e*log(x*e + d) + b*f*n*e*log(g*x + f) - b
*d*g*n*log(x*e + d) - b*d*g*log(c) + b*f*e*log(c) - a*d*g + a*f*e)/(d*g^3*x
 - f*g^2*x*e + d*f*g^2 - f^2*g*e)
```

3.253 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)^2}\,dx$

Optimal. Leaf size=179

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+\right.\right.}{f^2}$$

```
[Out] -((b*e*n*Log[d + e*x])/(f*(e*f - d*g))) + (a + b*Log[c*(d + e*x)^n])/(f*(f
+ g*x)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (b*e*n*Log[f +
 g*x])/(f*(e*f - d*g)) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f
 - d*g)])/f^2 - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/f^2 + (b*n*P
olyLog[2, 1 + (e*x)/d])/f^2
```

Rubi [A] time = 0.201528, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.36, Rules used = {44, 2416, 2394, 2315, 2395, 36, 31, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e(f+gx)}{ef-dg}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2}+\frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+\right.\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/(f*(e*f - d*g))) + (a + b*Log[c*(d + e*x)^n])/(f*(f
+ g*x)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 + (b*e*n*Log[f +
 g*x])/(f*(e*f - d*g)) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f
 - d*g)])/f^2 - (b*n*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/f^2 + (b*n*P
olyLog[2, 1 + (e*x)/d])/f^2
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g(a+b\log(c(d+ex)^n))}{f(f+gx)^2} - \frac{g(a+b\log(c(d+ex)^n))}{f^2(f+gx)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{(f+gx)^2}\,dx}{f}$$

$$= \frac{a+b\log(c(d+ex)^n)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} - \frac{(a+b\log(c(d+ex)^n))\log}{f^2}$$

$$= \frac{a+b\log(c(d+ex)^n)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} - \frac{(a+b\log(c(d+ex)^n))\log}{f^2}$$

$$= -\frac{ben\log(d+ex)}{f(ef-dg)} + \frac{a+b\log(c(d+ex)^n)}{f(f+gx)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} + \frac{ben\log}{f(ef}$$

Mathematica [A] time = 0.138557, size = 152, normalized size = 0.85

$$\frac{-bn\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)+bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)-\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))+\frac{f(a+b\log(c(d+ex)^n))}{f+gx}+\log\left(-\frac{e}{}\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x)^2),x]
```

```
[Out] ((f*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) + Log[-((e*x)/d)]*(a + b*Log[c*(d
 + e*x)^n]) - (b*e*f*n*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) - (a + b*
Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] - b*n*PolyLog[2, (g*(d +
 e*x))/(-(e*f) + d*g)] + b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Maple [C] time = 0.543, size = 694, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x+f)^2,x)
```

```
[Out] -1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/(g*x+f)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^
3/f^2*ln(x)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x+f)+1/2*I*
b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/(g*x+f)+1/2*I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2/f/(g*x+f)+b*e*n/f/(d*g-e*f)*ln(e*x+d)-b*e*n/f/(d*g-e
*f)*ln(g*x+f)+b*ln((e*x+d)^n)/f^2*ln(x)-b*ln((e*x+d)^n)/f^2*ln(g*x+f)+b*ln(
(e*x+d)^n)/f/(g*x+f)-b*n/f^2*ln(x)*ln((e*x+d)/d)+1/2*I*b*Pi*csgn(I*c*(e*x+d
)^n)^3/f^2*ln(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2
*ln(g*x+f)-a/f^2*ln(g*x+f)+a/f/(g*x+f)+a/f^2*ln(x)-b*ln(c)/f^2*ln(g*x+f)+b*
ln(c)/f/(g*x+f)+b*ln(c)/f^2*ln(x)-b*n/f^2*dilog((e*x+d)/d)+b*n/f^2*dilog(((
g*x+f)*e+d*g-f*e)/(d*g-e*f))-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)/f/(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)/f^2*ln(x)+b*n/f^2*ln(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+1/2*I*
b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*ln(g*x+f)+1/2*I*b*
Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(x)+1/2*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2/f^2*ln(x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{1}{fgx+f^2}-\frac{\log\left(gx+f\right)}{f^2}+\frac{\log\left(x\right)}{f^2}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log\left(c\right)}{g^2x^3+2\,fgx^2+f^2x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] a*(1/(f*g*x + f^2) - log(g*x + f)/f^2 + log(x)/f^2) + b*integrate((log((e*x
 + d)^n) + log(c))/(g^2*x^3 + 2*f*g*x^2 + f^2*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^3+2\,fgx^2+f^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^3 + 2*f*g*x^2 + f^2*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left((ex+d)^n c\right) + a}{(gx+f)^2 x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)^2*x), x)
```

3.254 $\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)^2}\,dx$

Optimal. Leaf size=240

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^3}-\frac{g(a+b\log(c(d+ex)^n))}{f^2(f+gx)}$$

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) + (b*e*g*n*Log[d + e*
x])/(f^2*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) - (g*(a + b*Log[
c*(d + e*x)^n]))/(f^2*(f + g*x)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e
*x)^n]))/f^3 - (b*e*g*n*Log[f + g*x])/(f^2*(e*f - d*g)) + (2*g*(a + b*Log[c
*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 + (2*b*g*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/f^3 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rubi [A] time = 0.244097, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$\frac{2bgn\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^3}-\frac{g(a+b\log(c(d+ex)^n))}{f^2(f+gx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)^2),x]
```

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) + (b*e*g*n*Log[d + e*
x])/(f^2*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) - (g*(a + b*Log[
c*(d + e*x)^n]))/(f^2*(f + g*x)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e
*x)^n]))/f^3 - (b*e*g*n*Log[f + g*x])/(f^2*(e*f - d*g)) + (2*g*(a + b*Log[c
*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^3 + (2*b*g*n*PolyLog[2, -(
(g*(d + e*x))/(e*f - d*g))])/f^3 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x^2} - \frac{2g(a+b\log(c(d+ex)^n))}{f^3x} + \frac{g^2(a+b\log(c(d+ex)^n))}{f^2(f+gx)^2} + \frac{2\ldots}{\ldots}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3} + \frac{(2g^2)\int \frac{a+b\log(c(d+ex)^n)}{f+gx}\,dx}{f^3} + \frac{g^2\int \frac{a+b\,\mathrm{l}\ldots}{\ldots}}{\ldots}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g(a+b\log(c(d+ex)^n))}{f^2(f+gx)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n\ldots}{f^3}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g(a+b\log(c(d+ex)^n))}{f^2(f+gx)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n\ldots}{f^3}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{begn\log(d+ex)}{f^2(ef-dg)} - \frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g(a+b\log\ldots}{f^2(f\ldots}$$

Mathematica [A] time = 0.208285, size = 199, normalized size = 0.83

$$\frac{2bgn\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)-2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)-\frac{fg(a+b\log(c(d+ex)^n))}{f+gx}+2g\log\left(\frac{e(f+gx)}{ef-dg}\right)(a+b\log(c(d+ex)^n))-\frac{f(a+}{}}{f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x)^2),x]
```

```
[Out] ((b*e*f*n*(Log[x] - Log[d + e*x]))/d - (f*(a + b*Log[c*(d + e*x)^n]))/x - (
f*g*(a + b*Log[c*(d + e*x)^n]))/(f + g*x) - 2*g*Log[-((e*x)/d)]*(a + b*Log[
c*(d + e*x)^n]) + (b*e*f*g*n*(Log[d + e*x] - Log[f + g*x]))/(e*f - d*g) + 2
*g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)] + 2*b*g*n*Poly
Log[2, (g*(d + e*x))/(-(e*f) + d*g)] - 2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Maple [C] time = 0.519, size = 936, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x+f)^2,x)
```

```
[Out] -b*ln((e*x+d)^n)/f^2/x+b*e*n*ln(x)/d/f^2+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)/f^3*g*ln(x)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x+1/2
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/(g*x+f)-b*ln(
(e*x+d)^n)/f^2*g/(g*x+f)+2*b*n/f^3*g*ln(x)*ln((e*x+d)/d)-2*b*n/f^3*g*ln(g*x
+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+2*b*n/f^3*g*dilog((e*x+d)/d)-2*b*n/f^
3*g*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-b*ln(c)/f^2*g/(g*x+f)+2*b*ln(c)/f^
3*g*ln(g*x+f)-2*b*ln(c)/f^3*g*ln(x)-I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(g
*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x-a/f^2/x-I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(g*x+f)-a/f^2*g/(g*x+f)+
2*a/f^3*g*ln(g*x+f)-2*a/f^3*g*ln(x)-b*ln(c)/f^2/x+b*e^2*n/f/d/(d*g-e*f)*ln(
e*x+d)+b*e*n/f^2*g/(d*g-e*f)*ln(g*x+f)+2*b*ln((e*x+d)^n)/f^3*g*ln(g*x+f)-2*
b*ln((e*x+d)^n)/f^3*g*ln(x)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln
(x)+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x+f)+I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2/f^2*g/(g*x+f)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2/f^2*g/(g*x+f)-I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(
x)+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2/x-1/2*I*b
*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x+I*b*Pi*csgn(I*c*(e*x+d)^n
)^3/f^3*g*ln(x)-2*b*e*n/f^2/(d*g-e*f)*ln(e*x+d)*g+1/2*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3/f^2*g/(g*x+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-a\left(\frac{2\,gx+f}{f^2gx^2+f^3x}-\frac{2\,g\log\left(gx+f\right)}{f^3}+\frac{2\,g\log\left(x\right)}{f^3}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{g^2x^4+2\,fgx^3+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] -a*((2*g*x + f)/(f^2*g*x^2 + f^3*x) - 2*g*log(g*x + f)/f^3 + 2*g*log(x)/f^3
) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x^4 + 2*f*g*x^3 + f^2*x^2)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^4+2\,fgx^3+f^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^4 + 2*f*g*x^3 + f^2*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx+f\right)^2 x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)^2*x^2), x)
```

3.255 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)^2}\,dx$

Optimal. Leaf size=335

$$-\frac{3bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^4}+\frac{3bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^4}+\frac{3g^2\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^4}+\frac{g^2(a+b\log(c(d+}{f^3(f+gx)}$$

```
[Out] -(b*e*n)/(2*d*f^2*x) - (b*e^2*n*Log[x])/(2*d^2*f^2) - (2*b*e*g*n*Log[x])/(d
*f^3) + (b*e^2*n*Log[d + e*x])/(2*d^2*f^2) + (2*b*e*g*n*Log[d + e*x])/(d*f^
3) - (b*e*g^2*n*Log[d + e*x])/(f^3*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n]
)/(2*f^2*x^2) + (2*g*(a + b*Log[c*(d + e*x)^n]))/(f^3*x) + (g^2*(a + b*Log[
c*(d + e*x)^n]))/(f^3*(f + g*x)) + (3*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d +
 e*x)^n]))/f^4 + (b*e*g^2*n*Log[f + g*x])/(f^3*(e*f - d*g)) - (3*g^2*(a + b
*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^4 - (3*b*g^2*n*PolyL
og[2, -((g*(d + e*x))/(e*f - d*g))])/f^4 + (3*b*g^2*n*PolyLog[2, 1 + (e*x)/
d])/f^4
```

Rubi [A] time = 0.314122, antiderivative size = 335, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$-\frac{3bg^2n\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)}{f^4}+\frac{3bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^4}+\frac{3g^2\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^4}+\frac{g^2(a+b\log(c(d+}{f^3(f+gx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)^2),x]
```


```
[Out] -(b*e*n)/(2*d*f^2*x) - (b*e^2*n*Log[x])/(2*d^2*f^2) - (2*b*e*g*n*Log[x])/(d
*f^3) + (b*e^2*n*Log[d + e*x])/(2*d^2*f^2) + (2*b*e*g*n*Log[d + e*x])/(d*f^
3) - (b*e*g^2*n*Log[d + e*x])/(f^3*(e*f - d*g)) - (a + b*Log[c*(d + e*x)^n]
)/(2*f^2*x^2) + (2*g*(a + b*Log[c*(d + e*x)^n]))/(f^3*x) + (g^2*(a + b*Log[
c*(d + e*x)^n]))/(f^3*(f + g*x)) + (3*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d +
 e*x)^n]))/f^4 + (b*e*g^2*n*Log[f + g*x])/(f^3*(e*f - d*g)) - (3*g^2*(a + b
*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/f^4 - (3*b*g^2*n*PolyL
og[2, -((g*(d + e*x))/(e*f - d*g))])/f^4 + (3*b*g^2*n*PolyLog[2, 1 + (e*x)/
d])/f^4
```


Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x^3} - \frac{2g(a+b\log(c(d+ex)^n))}{f^3x^2} + \frac{3g^2(a+b\log(c(d+ex)^n))}{f^4x} - \frac{g^3(\ldots}{\ldots}\right.$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}dx}{f^2} - \frac{(2g)\int \frac{a+b\log(c(d+ex)^n)}{x^2}dx}{f^3} + \frac{(3g^2)\int \frac{a+b\log(c(d+ex)^n)}{x}dx}{f^4} - \frac{(3g^3)\int \frac{a+b\log\ldots}{\ldots}}{f\ldots}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2f^2x^2} + \frac{2g(a+b\log(c(d+ex)^n))}{f^3x} + \frac{g^2(a+b\log(c(d+ex)^n))}{f^3(f+gx)} + \frac{3g^2\log\ldots}{\ldots}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2f^2x^2} + \frac{2g(a+b\log(c(d+ex)^n))}{f^3x} + \frac{g^2(a+b\log(c(d+ex)^n))}{f^3(f+gx)} + \frac{3g^2\log\ldots}{\ldots}$$

$$= -\frac{ben}{2df^2x} - \frac{be^2n\log(x)}{2d^2f^2} - \frac{2begn\log(x)}{df^3} + \frac{be^2n\log(d+ex)}{2d^2f^2} + \frac{2begn\log(d+ex)}{df^3} - \frac{beg^2n\log\ldots}{f^3(ef\ldots}$$

Mathematica [A] time = 0.399546, size = 269, normalized size = 0.8

$$-\frac{6bg^2n\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right) - 6bg^2n\text{PolyLog}\left(2,\frac{ex}{d}+1\right) + \frac{f^2(a+b\log(c(d+ex)^n))}{x^2} - \frac{2fg^2(a+b\log(c(d+ex)^n))}{f+gx} + 6g^2\log\left(\frac{e(f+gx)}{ef-dg}\right)(a\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x)^2),x]
```

```
[Out] -((4*b*e*f*g*n*(Log[x] - Log[d + e*x]))/d + (b*e*f^2*n*(d + e*x*Log[x] - e*
x*Log[d + e*x]))/(d^2*x) + (f^2*(a + b*Log[c*(d + e*x)^n]))/x^2 - (4*f*g*(a
 + b*Log[c*(d + e*x)^n]))/x - (2*f*g^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x
) - 6*g^2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + (2*b*e*f*g^2*n*(Log[
d + e*x] - Log[f + g*x]))/(e*f - d*g) + 6*g^2*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(f + g*x))/(e*f - d*g)] + 6*b*g^2*n*PolyLog[2, (g*(d + e*x))/(-(e*f) +
 d*g)] - 6*b*g^2*n*PolyLog[2, 1 + (e*x)/d])/(2*f^4)
```

Maple [C] time = 0.536, size = 1224, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x+f)^2,x)
```

```
[Out] -1/2*b*e^2*n*ln(x)/d^2/f^2-3*b*ln(c)/f^4*g^2*ln(g*x+f)+3*b*ln(c)/f^4*g^2*ln
(x)+b*ln(c)/f^3*g^2/(g*x+f)+2*b*ln(c)/f^3*g/x-1/2*b*ln((e*x+d)^n)/f^2/x^2+a
/f^3*g^2/(g*x+f)+2*a/f^3*g/x-3*a/f^4*g^2*ln(g*x+f)+3*a/f^4*g^2*ln(x)-1/2*b*
ln(c)/f^2/x^2-1/2*a/f^2/x^2+3*b*e*n/f^3/(d*g-e*f)*ln(e*x+d)*g^2-1/2*b*e^3*n
/f/d^2/(d*g-e*f)*ln(e*x+d)-b*e*n/f^3*g^2/(d*g-e*f)*ln(g*x+f)-3/2*b*e^2*n/f^
2/d/(d*g-e*f)*ln(e*x+d)*g-3*b*n/f^4*g^2*ln(x)*ln((e*x+d)/d)+3*b*n/f^4*g^2*l
n(g*x+f)*ln(((g*x+f)*e+d*g-f*e)/(d*g-e*f))-3*b*n/f^4*g^2*dilog((e*x+d)/d)+3
*b*n/f^4*g^2*dilog(((g*x+f)*e+d*g-f*e)/(d*g-e*f))+3/2*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2/f^4*g^2*ln(x)-3/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/
f^4*g^2*ln(g*x+f)+3/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^4*g^
2*ln(x)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g/x+I*b*Pi*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g/x+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x^2
```

```
+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2/(g*x+f)+1/2*I*b*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g^2/(g*x+f)+1/4*I*b*Pi*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2/x^2-3/2*I*b*Pi*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2/f^4*g^2*ln(g*x+f)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2/f^2/x^2-3/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^4*g^2*ln(x)-1/4*I*
b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)
^3/f^3*g^2/(g*x+f)-I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g/x-3*b*ln((e*x+d)^n)/f
^4*g^2*ln(g*x+f)+b*ln((e*x+d)^n)/f^3*g^2/(g*x+f)+3*b*ln((e*x+d)^n)/f^4*g^2*
ln(x)+2*b*ln((e*x+d)^n)/f^3*g/x+3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)/f^4*g^2*ln(g*x+f)-1/2*b*e*n/d/f^2/x+3/2*I*b*Pi*csgn(I*c*(e*
x+d)^n)^3/f^4*g^2*ln(g*x+f)-3/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)/f^4*g^2*ln(x)-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)/f^3*g/x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^
3*g^2/(g*x+f)-2*b*e*g*n*ln(x)/d/f^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{6g^2x^2+3fgx-f^2}{f^3gx^3+f^4x^2}-\frac{6g^2\log(gx+f)}{f^4}+\frac{6g^2\log(x)}{f^4}\right)+b\int\frac{\log\left((ex+d)^n\right)+\log(c)}{g^2x^5+2fgx^4+f^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*((6*g^2*x^2 + 3*f*g*x - f^2)/(f^3*g*x^3 + f^4*x^2) - 6*g^2*log(g*x +
f)/f^4 + 6*g^2*log(x)/f^4) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x
^5 + 2*f*g*x^4 + f^2*x^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^nc\right)+a}{g^2x^5+2fgx^4+f^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^5 + 2*f*g*x^4 + f^2*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x+f)**2,x)
```

```
[Out] Timed out
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left((ex+d)^n c\right) + a}{\left(gx+f\right)^2 x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x + f)^2*x^3), x)
```

3.256 $\int \frac{x^5(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=397

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^3}+\frac{bf^2n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^3}+\frac{f^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^3}+\frac{f^2\log(\cdots}{\cdots}$$

```
[Out] -(b*d*f*n*x)/(2*e*g^2) + (b*d^3*n*x)/(4*e^3*g) + (b*f*n*x^2)/(4*g^2) - (b*d
^2*n*x^2)/(8*e^2*g) + (b*d*n*x^3)/(12*e*g) - (b*n*x^4)/(16*g) + (b*d^2*f*n*
Log[d + e*x])/(2*e^2*g^2) - (b*d^4*n*Log[d + e*x])/(4*e^4*g) - (f*x^2*(a +
b*Log[c*(d + e*x)^n]))/(2*g^2) + (x^4*(a + b*Log[c*(d + e*x)^n]))/(4*g) + (
f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(2*g^3) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3) + (b*f^2*n*PolyLog[2, -((Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3) + (b*f^2*n*PolyLog[2, (
Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3)
```

Rubi [A] time = 0.510295, antiderivative size = 397, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^3}+\frac{bf^2n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^3}+\frac{f^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^3}+\frac{f^2\log(\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -(b*d*f*n*x)/(2*e*g^2) + (b*d^3*n*x)/(4*e^3*g) + (b*f*n*x^2)/(4*g^2) - (b*d
^2*n*x^2)/(8*e^2*g) + (b*d*n*x^3)/(12*e*g) - (b*n*x^4)/(16*g) + (b*d^2*f*n*
Log[d + e*x])/(2*e^2*g^2) - (b*d^4*n*Log[d + e*x])/(4*e^4*g) - (f*x^2*(a +
b*Log[c*(d + e*x)^n]))/(2*g^2) + (x^4*(a + b*Log[c*(d + e*x)^n]))/(4*g) + (
f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(2*g^3) + (f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3) + (b*f^2*n*PolyLog[2, -((Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3) + (b*f^2*n*PolyLog[2, (
Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3)
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^5 (a + b\log (c(d + ex)^n))}{f + gx^2} dx = \int \left(-\frac{fx (a + b\log (c(d + ex)^n))}{g^2} + \frac{x^3 (a + b\log (c(d + ex)^n))}{g} + \frac{f^2 x (a + b\log (c(d +}{g^2 (f + gx^2)} \right.$$

$$= -\frac{f \int x (a + b\log (c(d + ex)^n)) \, dx}{g^2} + \frac{f^2 \int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2} dx}{g^2} + \frac{\int x^3 (a + b\log (c(d}{g}$$

$$= -\frac{fx^2 (a + b\log (c(d + ex)^n))}{2g^2} + \frac{x^4 (a + b\log (c(d + ex)^n))}{4g} + \frac{f^2 \int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}(\sqrt{-f}-\sqrt{g}x)} \right.}{g^2}$$

$$= -\frac{fx^2 (a + b\log (c(d + ex)^n))}{2g^2} + \frac{x^4 (a + b\log (c(d + ex)^n))}{4g} - \frac{f^2 \int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x} dx}{2g^{5/2}}$$

$$= -\frac{bdfnx}{2eg^2} + \frac{bd^3nx}{4e^3g} + \frac{bfnx^2}{4g^2} - \frac{bd^2nx^2}{8e^2g} + \frac{bdnx^3}{12eg} - \frac{bnx^4}{16g} + \frac{bd^2fn\log(d + ex)}{2e^2g^2} - \frac{bd^4 n}{}$$

$$= -\frac{bdfnx}{2eg^2} + \frac{bd^3nx}{4e^3g} + \frac{bfnx^2}{4g^2} - \frac{bd^2nx^2}{8e^2g} + \frac{bdnx^3}{12eg} - \frac{bnx^4}{16g} + \frac{bd^2fn\log(d + ex)}{2e^2g^2} - \frac{bd^4 n}{}$$

$$= -\frac{bdfnx}{2eg^2} + \frac{bd^3nx}{4e^3g} + \frac{bfnx^2}{4g^2} - \frac{bd^2nx^2}{8e^2g} + \frac{bdnx^3}{12eg} - \frac{bnx^4}{16g} + \frac{bd^2fn\log(d + ex)}{2e^2g^2} - \frac{bd^4 n}{}$$

Mathematica [A] time = 0.287433, size = 331, normalized size = 0.83

$$\frac{24bf^2n\text{PolyLog}\left(2, -\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + 24bf^2n\text{PolyLog}\left(2, \frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right) + 24f^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a + b\log (c(d + ex)^n)) + 2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((12*b*f*g*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]))/e^2 - (b*g^2*n*(e*x*(
-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + 12*d^4*Log[d + e*x]))/e^4
- 24*f*g*x^2*(a + b*Log[c*(d + e*x)^n]) + 12*g^2*x^4*(a + b*Log[c*(d + e*x)
^n]) + 24*f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*
Sqrt[-f] + d*Sqrt[g])] + 24*f^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + 24*b*f^2*n*PolyLog[2, -((Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 24*b*f^2*n*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(48*g^3)
```

Maple [C] time = 0.518, size = 905, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x)
```

```
[Out] 1/4*a/g*x^4+1/2*a*f^2/g^3*ln(g*x^2+f)+1/4*b*ln(c)/g*x^4-1/2*a/g^2*f*x^2-1/2
*b*ln((e*x+d)^n)/g^2*f*x^2-1/2*b*ln(c)/g^2*f*x^2-1/2*b*n*f^2/g^3*ln(e*x+d)*
```

```
ln(g*x^2+f)+1/2*b*n*f^2/g^3*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*
(-f*g)^(1/2)+d*g))+1/2*b*n*f^2/g^3*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d
*g)/(e*(-f*g)^(1/2)-d*g))+1/4*b*ln((e*x+d)^n)/g*x^4+1/2*b*ln(c)*f^2/g^3*ln(
g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3*ln(g*x^2+f)+1/4*I*b*Pi*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*f*x^2+1/4*I*b*Pi*csgn(I*c
*(e*x+d)^n)^3/g^2*f*x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/
g^2*f*x^2+1/2*b*n*f^2/g^3*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1
/2)+d*g))+1/2*b*n*f^2/g^3*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1
/2)-d*g))+1/2*b*ln((e*x+d)^n)*f^2/g^3*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^3*ln(g*x^2+f)-1/8*I*b*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x^4+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2*f^2/g^3*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2*f^2/g^3*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*
f*x^2-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^4+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2/g*x^4+1/8*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^4
-1/16*b*n*x^4/g+1/4*b*f*n*x^2/g^2+1/4*b*d^3*n*x/e^3/g-1/8*b*d^2*n*x^2/e^2/g
+1/12*b*d*n*x^3/e/g-1/4*b*d^4*n*ln(e*x+d)/e^4/g-1/2*b*d*f*n*x/e/g^2+1/2*b*d
^2*f*n*ln(e*x+d)/e^2/g^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{4}a\left(\frac{2f^2\log\left(gx^2+f\right)}{g^3}+\frac{gx^4-2fx^2}{g^2}\right)+b\int\frac{x^5\log\left((ex+d)^n\right)+x^5\log\left(c\right)}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/4*a*(2*f^2*log(g*x^2 + f)/g^3 + (g*x^4 - 2*f*x^2)/g^2) + b*integrate((x^5
*log((e*x + d)^n) + x^5*log(c))/(g*x^2 + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^5\log\left((ex+d)^nc\right)+ax^5}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^5*log((e*x + d)^n*c) + a*x^5)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log \left((ex+d)^n c\right) + a\right)x^5}{gx^2 + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^5/(g*x^2 + f), x)
```

3.257 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{f+gx^2} dx$

Optimal. Leaf size=278

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}\right.}{e\sqrt{-f}}\right.}{}$$

```
[Out] (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d^2*n*Log[d + e*x])/(2*e^2*g) + (x
^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) - (f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/
(2*g^2) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*g^2) - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^2)
```

Rubi [A] time = 0.325094, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^2}-\frac{f\log\left(\frac{e\left(\sqrt{-f}\right.}{e\sqrt{-f}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (b*d*n*x)/(2*e*g) - (b*n*x^2)/(4*g) - (b*d^2*n*Log[d + e*x])/(2*e^2*g) + (x
^2*(a + b*Log[c*(d + e*x)^n]))/(2*g) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) - (f*(a + b*Log
[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/
(2*g^2) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*g^2) - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^2)
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{f+gx^2}\,dx = \int\left(\frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{fx\left(a+b\log\left(c(d+ex)^n\right)\right)}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int x\left(a+b\log\left(c(d+ex)^n\right)\right)dx}{g}-\frac{f\int\frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{g}$$

$$= \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{f\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx}{g}-\frac{(ben)\int\cdots}{2g}\cdots$$

$$= \frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}+\frac{f\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}}-\frac{f\int\frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{3/2}}-\frac{(ben)\cdots}{\cdots}$$

$$= \frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{f\left(a+b\log\left(c(d+\cdots\right.\right.}{\cdots}$$

$$= \frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{f\left(a+b\log\left(c(d+\cdots\right.\right.}{\cdots}$$

$$= \frac{bdnx}{2eg}-\frac{bnx^2}{4g}-\frac{bd^2n\log(d+ex)}{2e^2g}+\frac{x^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g}-\frac{f\left(a+b\log\left(c(d+\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 0.172062, size = 243, normalized size = 0.87

$$-\frac{2bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+2bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)+2f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))+2f\log\left(\frac{e(}{e}\right.}{4g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -((b*g*n*(e*x*(-2*d + e*x) + 2*d^2*Log[d + e*x]))/e^2 - 2*g*x^2*(a + b*Log[
c*(d + e*x)^n]) + 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]
*x))/(e*Sqrt[-f] + d*Sqrt[g])] + 2*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqr
t[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + 2*b*f*n*PolyLog[2, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 2*b*f*n*PolyLog[2, (Sqrt[g]*(d +
 e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^2)
```

Maple [C] time = 0.456, size = 631, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x)
```

```
[Out] 1/2*b*ln((e*x+d)^n)/g*x^2-1/2*b*ln((e*x+d)^n)*f/g^2*ln(g*x^2+f)-1/4*b*n*x^2
/g+1/2*b*d*n*x/e/g-1/2*b*d^2*n*ln(e*x+d)/e^2/g+1/2*b*n*f/g^2*ln(e*x+d)*ln(g
*x^2+f)-1/2*b*n*f/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)
^(1/2)+d*g))-1/2*b*n*f/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(
-f*g)^(1/2)-d*g))-1/2*b*n*f/g^2*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f
*g)^(1/2)+d*g))-1/2*b*n*f/g^2*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g
)^(1/2)-d*g))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2*ln(g*x^2+f)-1/4*I*b*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x^2+f)-1/4*I*b*Pi*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x^2+1/4*I*b*Pi*csgn(I*c)*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f/g^2*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2*f/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2/g*x^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^2-1/4*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^2+1/2*b*ln(c)/g*x^2-1/2*b*ln(c)*f/g^2*ln(g*x^
2+f)+1/2*a/g*x^2-1/2*a*f/g^2*ln(g*x^2+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{x^2}{g}-\frac{f\log\left(gx^2+f\right)}{g^2}\right)+b\int\frac{x^3\log\left((ex+d)^n\right)+x^3\log(c)}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(x^2/g - f*log(g*x^2 + f)/g^2) + b*integrate((x^3*log((e*x + d)^n) +
x^3*log(c))/(g*x^2 + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^n c\right)+ax^3}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^3}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x^2 + f), x)
```

3.258 $\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=203

$$\frac{bn\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{bn\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(}{}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x
))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```

Rubi [A] time = 0.179626, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {260, 2416, 2394, 2393, 2391}

$$\frac{bn\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}+\frac{bn\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g}+\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```


```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x
))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```


Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx = \int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2\sqrt{g}}+\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2\sqrt{g}}$$

$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

$$= \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

Mathematica [A] time = 0.0370277, size = 172, normalized size = 0.85

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)+\left(\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)+\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\right)(a+b\log(c(d+ex)}{2g}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d
*Sqrt[g])] + Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])]) + b*
n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g)
```

Maple [C] time = 0.395, size = 411, normalized size = 2.

$$\frac{b\ln\left(gx^2+f\right)\ln\left((ex+d)^n\right)}{2g}-\frac{bn\ln(ex+d)\ln\left(gx^2+f\right)}{2g}+\frac{bn\ln(ex+d)}{2g}\ln\left(\left(e\sqrt{-fg}-g(ex+d)+dg\right)\left(e\sqrt{-fg}+d\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x)
```

```
[Out] 1/2*b/g*ln(g*x^2+f)*ln((e*x+d)^n)-1/2*b/g*n*ln(e*x+d)*ln(g*x^2+f)+1/2*b/g*n
*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b/g*
```

```
n*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b/g
*n*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b/g*n*dil
og((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/4*I/g*ln(g*x^2+f)
*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I/g*ln(g*x^2+f)*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I/g*ln(g*x^2+f)*b*Pi*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I/g*ln(g*x^2+f)*b*Pi*csgn(I*c*(e*x+d)^n)^3+1/
2/g*ln(g*x^2+f)*b*ln(c)+1/2*a/g*ln(g*x^2+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{x\log\left((ex+d)^n\right)+x\log(c)}{gx^2+f}\,dx+\frac{a\log\left(gx^2+f\right)}{2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] b*integrate((x*log((e*x + d)^n) + x*log(c))/(g*x^2 + f), x) + 1/2*a*log(g*x
^2 + f)/g
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx\log\left((ex+d)^n c\right)+ax}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x*log((e*x + d)^n*c) + a*x)/(g*x^2 + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)}{f+gx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))/(f + g*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")

[Out] integrate((b*log((e*x + d)^n*c) + a)*x/(g*x^2 + f), x)
```

3.259 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)}\,dx$

Optimal. Leaf size=245

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+$$

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a + b
*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g]
)])/(2*f) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*f) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*f) + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rubi [A] time = 0.316359, antiderivative size = 245, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.37, Rules used = {266, 36, 29, 31, 2416, 2394, 2315, 260, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)),x]
```

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f - ((a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a + b
*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g]
)])/(2*f) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(2*f) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*f) + (b*n*PolyLog[2, 1 + (e*x)/d])/f
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{gx(a+b\log(c(d+ex)^n))}{f(f+gx^2)}\right)dx$$
$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f}$$
$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{g\int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}(\sqrt{-f}-\sqrt{g}x)} + \frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}(\sqrt{-f}+\sqrt{g}x)}\right)dx}{f} - \frac{(ben)\int \frac{\text{lo}}{}}{f}$$
$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} + \frac{bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f} + \frac{\sqrt{g}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2f} - \frac{\sqrt{g}\int \frac{a+b\log}{\sqrt{-}}}{2}$$
$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+b\log(c}{}$$
$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+b\log(c}{}$$
$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f} - \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+b\log(c}{}$$

Mathematica [A] time = 0.0865037, size = 224, normalized size = 0.91

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right) - 2bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right) + \log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)),x]
```

```
[Out] -(-2*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + (a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] + (a + b*Log[c*(
d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] + b*n
*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog[
2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])] - 2*b*n*PolyLog[2, 1 + (e*
x)/d])/(2*f)
```

Maple [C] time = 0.402, size = 604, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x^2+f),x)
```

```
[Out] -1/2*b*ln((e*x+d)^n)/f*ln(g*x^2+f)+b*ln((e*x+d)^n)/f*ln(x)-b*n/f*dilog((e*x
+d)/d)-b*n/f*ln(x)*ln((e*x+d)/d)+1/2*b*n/f*ln(e*x+d)*ln(g*x^2+f)-1/2*b*n/f*
ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/f
*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*n/
```

```
f*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/f*dilo
g((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2/f*ln(x)-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*ln(x)+1/4
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(g*x^2+f)+1/4*I
*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*ln(g*x^2+f)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)/f*ln(x)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2/f*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(g*x
^2+f)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*ln(x)-1/2*b*ln(c
)/f*ln(g*x^2+f)+b*ln(c)/f*ln(x)-1/2*a/f*ln(g*x^2+f)+a/f*ln(x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}a\left(\frac{\log\left(gx^2+f\right)}{f}-\frac{2\log\left(x\right)}{f}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{gx^3+fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -1/2*a*(log(g*x^2 + f)/f - 2*log(x)/f) + b*integrate((log((e*x + d)^n) + lo
g(c))/(g*x^3 + f*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left(\left(ex+d\right)^nc\right)+a}{gx^3+fx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^3 + f*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(ex+d\right)^nc\right)+a}{\left(gx^2+f\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x), x)
```

3.260 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)}\,dx$

Optimal. Leaf size=331

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{f^2}$$

```
[Out] -(b*e*n)/(2*d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) + (b*e^2*n*Log[d + e*x])/(2
*d^2*f) - (a + b*Log[c*(d + e*x)^n])/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] -
 Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) + (g*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b
*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*f^2) +
 (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) -
 (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rubi [A] time = 0.368075, antiderivative size = 331, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {266, 44, 2416, 2395, 2394, 2315, 260, 2393, 2391}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}-\frac{bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)),x]
```


```
[Out] -(b*e*n)/(2*d*f*x) - (b*e^2*n*Log[x])/(2*d^2*f) + (b*e^2*n*Log[d + e*x])/(2
*d^2*f) - (a + b*Log[c*(d + e*x)^n])/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n]))/f^2 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] -
 Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) + (g*(a + b*Log[c*(d + e*x)
^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b
*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*f^2) +
 (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) -
 (b*g*n*PolyLog[2, 1 + (e*x)/d])/f^2
```


Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx^3} - \frac{g(a+b\log(c(d+ex)^n))}{f^2x} + \frac{g^2x(a+b\log(c(d+ex)^n))}{f^2(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^3}dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x}dx}{f^2} + \frac{g^2\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}dx}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} + \frac{g^2\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}(\sqrt{-f}-\sqrt{g}x)} + \right.}{f^2}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{f^2} - \frac{bgn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f^2} - \frac{g^{3/2}\int}{}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\,\text{lo}}{f^2}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\,\text{lo}}{f^2}$$

$$= -\frac{ben}{2dfx} - \frac{be^2n\log(x)}{2d^2f} + \frac{be^2n\log(d+ex)}{2d^2f} - \frac{a+b\log(c(d+ex)^n)}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\,\text{lo}}{f^2}$$

Mathematica [A] time = 0.178629, size = 279, normalized size = 0.84

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)-2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)+g\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)),x]
```

```
[Out] (-((b*e*f*n*(d + e*x*Log[x] - e*x*Log[d + e*x]))/(d^2*x)) - (f*(a + b*Log[c
*(d + e*x)^n]))/x^2 - 2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + g*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])] + g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])] + b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
d*Sqrt[g]))] + b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)] - 2*b*g*n*PolyLog[2, 1 + (e*x)/d])/(2*f^2)
```

Maple [C] time = 0.417, size = 841, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x^2+f),x)
```

```
[Out] -1/2*b*e^2*n*ln(x)/d^2/f+1/2*b*e^2*n*ln(e*x+d)/d^2/f-1/2*I*b*Pi*csgn(I*c)*c
sgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)-1/2*b*n/f^2*g*ln(e*x+d)*ln(g*x^2+f)+1/4*I*
b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^2+1/2*b*n/f^2*g*ln(e*x+d)*ln((e*(-f*g)^(1/2)
```

```
-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/f^2*g*ln(e*x+d)*ln((e*(-f*g)^
(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*n/f^2*g*dilog((e*(-f*g)^(1
/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*ln(c)/f^2*g*ln(g*x^2+f)+1/2*
b*n/f^2*g*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*a/
f/x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*ln(x
)-1/2*b*ln(c)/f/x^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)/f^2*g*ln(g*x^2+f)+b*n/f^2*g*dilog((e*x+d)/d)-b*ln(c)/f^2*g*ln(x)+1/2*b*
ln((e*x+d)^n)/f^2*g*ln(g*x^2+f)-1/2*b*ln((e*x+d)^n)/f/x^2+1/2*a/f^2*g*ln(g*
x^2+f)+b*n/f^2*g*ln(x)*ln((e*x+d)/d)-a/f^2*g*ln(x)+1/4*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2/f^2*g*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2/f^2*g*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*ln(x)
-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g*ln(x)+1/4*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^2-1/4*I*b*Pi*csgn(I*c*(
e*x+d)^n)^3/f^2*g*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/
x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x^2-1/2*b*e*n/d/f/
x-b*ln((e*x+d)^n)/f^2*g*ln(x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,a\left(\frac{g\log\left(gx^2+f\right)}{f^2}-\frac{2\,g\log\left(x\right)}{f^2}-\frac{1}{fx^2}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{gx^5+fx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a*(g*log(g*x^2 + f)/f^2 - 2*g*log(x)/f^2 - 1/(f*x^2)) + b*integrate((lo
g((e*x + d)^n) + log(c))/(g*x^5 + f*x^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(ex+d\right)^nc\right)+a}{gx^5+fx^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^5 + f*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x**2+f),x)
```

```
[Out] Timed out
```

<u>**Giac**</u> **[F]** time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left((ex + d)^n c \right) + a}{\left(gx^2 + f \right) x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x^3), x)
```

3.261 $\int \frac{x^4(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=369

$$-\frac{b(-f)^{3/2}n\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{5/2}}+\frac{b(-f)^{3/2}n\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{5/2}}+\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n}{2g^{5/2}}$$

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 - (b*d^2*n*x)/(3*e^2*g) + (b*d*n*x^2)/(6*e*g
) - (b*n*x^3)/(9*g) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) - (b*f*(d + e*x)*Log
[c*(d + e*x)^n])/(e*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((-f)^(
3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f]
+ d*Sqrt[g])])/(2*g^(5/2)) - ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(5/2)) - (b*(-f)^(3
/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(5/
2)) + (b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(2*g^(5/2))
```

Rubi [A] time = 0.394707, antiderivative size = 369, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {302, 205, 2416, 2389, 2295, 2395, 43, 2409, 2394, 2393, 2391}

$$-\frac{b(-f)^{3/2}n\mathrm{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{5/2}}+\frac{b(-f)^{3/2}n\mathrm{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{5/2}}+\frac{(-f)^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n}{2g^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] -((a*f*x)/g^2) + (b*f*n*x)/g^2 - (b*d^2*n*x)/(3*e^2*g) + (b*d*n*x^2)/(6*e*g
) - (b*n*x^3)/(9*g) + (b*d^3*n*Log[d + e*x])/(3*e^3*g) - (b*f*(d + e*x)*Log
[c*(d + e*x)^n])/(e*g^2) + (x^3*(a + b*Log[c*(d + e*x)^n]))/(3*g) + ((-f)^(
3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f]
+ d*Sqrt[g])])/(2*g^(5/2)) - ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(5/2)) - (b*(-f)^(3
/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(5/
2)) + (b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(2*g^(5/2))
```

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^4 (a+b\log (c(d+ex)^n))}{f+gx^2}\,dx = \int \left(-\frac{f(a+b\log (c(d+ex)^n))}{g^2} + \frac{x^2 (a+b\log (c(d+ex)^n))}{g} + \frac{f^2 (a+b\log (c(d+ex)^n}{g^2(f+gx^2)}\right.$$

$$= -\frac{f\int (a+b\log (c(d+ex)^n))\,dx}{g^2} + \frac{f^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g^2} + \frac{\int x^2 (a+b\log (c(d+ex)^n}{g}$$

$$= -\frac{afx}{g^2} + \frac{x^3 (a+b\log (c(d+ex)^n))}{3g} - \frac{(bf)\int \log (c(d+ex)^n)\,dx}{g^2} + \frac{f^2\int \left(\frac{\sqrt{-f}(a+b\log(c(d+}{2f(\sqrt{-f}-\sqrt{g}}\right.}{}$$

$$= -\frac{afx}{g^2} + \frac{x^3 (a+b\log (c(d+ex)^n))}{3g} - \frac{(-f)^{3/2}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^2} - \frac{(-f)^{3/2}\int \frac{a+b\log(c(d}{\sqrt{-f}+\sqrt{}}}{2g^2}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} - \frac{bd^2nx}{3e^2g} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^3n\log(d+ex)}{3e^3g} - \frac{bf(d+ex)\log (c(d+e}{eg^2}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} - \frac{bd^2nx}{3e^2g} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^3n\log(d+ex)}{3e^3g} - \frac{bf(d+ex)\log (c(d+e}{eg^2}$$

$$= -\frac{afx}{g^2} + \frac{bfnx}{g^2} - \frac{bd^2nx}{3e^2g} + \frac{bdnx^2}{6eg} - \frac{bnx^3}{9g} + \frac{bd^3n\log(d+ex)}{3e^3g} - \frac{bf(d+ex)\log (c(d+e}{eg^2}$$

Mathematica [A] time = 0.338764, size = 339, normalized size = 0.92

$$-9b(-f)^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + 9b(-f)^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right) + 9(-f)^{3/2}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log (c(d+e$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (-18*a*f*Sqrt[g]*x + 18*b*f*Sqrt[g]*n*x - (b*g^(3/2)*n*(e*x*(6*d^2 - 3*d*e*
x + 2*e^2*x^2) - 6*d^3*Log[d + e*x]))/e^3 - (18*b*f*Sqrt[g]*(d + e*x)*Log[c
*(d + e*x)^n])/e + 6*g^(3/2)*x^3*(a + b*Log[c*(d + e*x)^n]) + 9*(-f)^(3/2)*
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])] + 9*Sqrt[-f]*f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - 9*b*(-f)^(3/2)*n*PolyLog[2, -((Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + 9*b*(-f)^(3/2)*n*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(18*g^(5/2))
```

Maple [C] time = 0.5, size = 982, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x)
```

```
[Out] -1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g*x^3+1/3*b*ln(c)/g*x^3+b/e*n/g^2*d*f+1/2
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x+a*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g
```

```
)^(1/2))+1/3*b/e^3/g*d^3*ln((e*x+d)^n)+b*f^2/g^2/(f*g)^(1/2)*arctan(1/2*(2*
g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)-b/e/g^2*f*d*ln((e*x+d)^n)-b*l
n(c)/g^2*f*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2
*f*x+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x^3-1/2*I*b*Pi*cs
gn(I*c*(e*x+d)^n)^3*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/3*b*ln((e
*x+d)^n)/g*x^3-b*ln((e*x+d)^n)/g^2*f*x-11/18*b/e^3*n/g*d^3+1/6*I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2/g*x^3+1/3*a/g*x^3-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2/g^2*f*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2
*f*x-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x^3+b*ln(
c)*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*n*f^2/g^2/(-f*g)^(1/2)
*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n*f^2/g^2
/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-b*
f^2/g^2/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+
d)+1/2*b*n*f^2/g^2*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)
/(e*(-f*g)^(1/2)+d*g))-1/2*b*n*f^2/g^2*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^
(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/9*b*n*x^3/
g+1/6*b*d*n*x^2/e/g-a*f*x/g^2-1/3*b*d^2*n*x/e^2/g+b*f*n*x/g^2+1/2*I*b*Pi*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2*f^2/g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1
/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*f^2/g^2/(f*g)^(1/
2)*arctan(x*g/(f*g)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^4\log\left((ex+d)^n c\right)+ax^4}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^4*log((e*x + d)^n*c) + a*x^4)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^4}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^4/(g*x^2 + f), x)
```

3.262 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx$

Optimal. Leaf size=276

$$-\frac{b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{3/2}}+\frac{b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{3/2}}+\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^{3/2}}-$$

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + (Sqrt[-f]*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*PolyL
og[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(3/2)) + (b*Sq
rt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/
2))
```

Rubi [A] time = 0.3094, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {321, 205, 2416, 2389, 2295, 2409, 2394, 2393, 2391}

$$-\frac{b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^{3/2}}+\frac{b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^{3/2}}+\frac{\sqrt{-f}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2g^{3/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (a*x)/g - (b*n*x)/g + (b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g) + (Sqrt[-f]*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*PolyL
og[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^(3/2)) + (b*Sq
rt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/
2))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2 (a + b\log(c(d+ex)^n))}{f + gx^2} dx = \int \left(\frac{a + b\log(c(d+ex)^n)}{g} - \frac{f(a + b\log(c(d+ex)^n))}{g(f+gx^2)} \right) dx$$

$$= \frac{\int (a + b\log(c(d+ex)^n))\, dx}{g} - \frac{f \int \frac{a+b\log(c(d+ex)^n)}{f+gx^2} dx}{g}$$

$$= \frac{ax}{g} + \frac{b\int \log(c(d+ex)^n)\, dx}{g} - \frac{f\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}+\sqrt{g}x)} \right) dx}{g}$$

$$= \frac{ax}{g} + \frac{b\,\text{Subst}\left(\int \log(cx^n)\, dx, x, d+ex\right)}{eg} - \frac{\sqrt{-f}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x} dx}{2g} - \frac{\sqrt{-f}\int \frac{a+b\log \ldots}{\sqrt{\ldots}}}{2\ldots}$$

$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}\ldots}{e\sqrt{-f}+d\sqrt{\ldots}}\right.}{2g^{3/2}}$$

$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}\ldots}{e\sqrt{-f}+d\sqrt{\ldots}}\right.}{2g^{3/2}}$$

$$= \frac{ax}{g} - \frac{bnx}{g} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-\sqrt{g}\ldots}{e\sqrt{-f}+d\sqrt{\ldots}}\right.}{2g^{3/2}}$$

Mathematica [A] time = 0.135868, size = 263, normalized size = 0.95

$$\frac{-b\sqrt{-f}n\text{PolyLog}\left(2, -\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + b\sqrt{-f}n\text{PolyLog}\left(2, \frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right) + \sqrt{-f}\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n)) - \ldots}{2g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2),x]
```

```
[Out] (2*a*Sqrt[g]*x - 2*b*Sqrt[g]*n*x + (2*b*Sqrt[g]*(d + e*x)*Log[c*(d + e*x)^n
])/e + Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])] - Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt
[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - b*Sqrt[-f]*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*Sqrt[-f]*n*PolyLog[2, (Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(3/2))
```

Maple [C] time = 0.454, size = 710, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x)
```

```
[Out] b*ln((e*x+d)^n)/g*x+b/e/g*d*ln((e*x+d)^n)+b*f/g/(f*g)^(1/2)*arctan(1/2*(2*g
*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*f/g/(f*g)^(1/2)*arctan(1/2*(2*
g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)-b*n*x/g-b/e*n/g*d-1/2*b*n*f/g
*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d
```

```
*g))+1/2*b*n*f/g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(
e*(-f*g)^(1/2)-d*g))-1/2*b*n*f/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+
d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n*f/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2
)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2/g*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3
*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g*x-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)
^3/g*x+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x+b*ln(c)/g*x-b
*ln(c)*f/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+a*x/g-a*f/g/(f*g)^(1/2)*arct
an(x*g/(f*g)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^n c\right)+ax^2}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x^2 + f), x)
```

3.263 $\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx$

Optimal. Leaf size=239

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2\sqrt{-f}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2\sqrt{-f}\sqrt{g}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*n*Po
lyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*Sqrt
[g]) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sq
rt[-f]*Sqrt[g])
```

Rubi [A] time = 0.168251, antiderivative size = 239, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2409, 2394, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2\sqrt{-f}\sqrt{g}}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2\sqrt{-f}\sqrt{g}}-\frac{\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2),x]
```


```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*n*Po
lyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*Sqrt
[g]) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sq
rt[-f]*Sqrt[g])
```


Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{f+gx^2}\,dx = \int \left(\frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{\sqrt{-f}\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2\sqrt{-f}} - \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2\sqrt{-f}}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{(b}{}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} + \frac{(b}{}$$

$$= \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}} - \frac{bn}{}$$

Mathematica [A] time = 0.0473448, size = 184, normalized size = 0.77

$$\frac{-bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)+\left(\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)-\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)\right)\left(a+b\log\left(c(d+ex\right.\right.}{2\sqrt{-f}\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*(Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d
*Sqrt[g])] - Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])]) - b*
n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] + b*n*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g])
```

Maple [C] time = 0.529, size = 474, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f),x)
```

```
[Out] -b/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)+b/
(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)+1/2
*b*n*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/
2)+d*g))-1/2*b*n*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(
e*(-f*g)^(1/2)-d*g))+1/2*b*n/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d
```

```
*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x
+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b*
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/(f*g)^(1/2)*arctan
(x*g/(f*g)^(1/2))*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/(f*g)^(1/2)*ar
ctan(x*g/(f*g)^(1/2))*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I/(f
*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b*Pi*csgn(I*c*(e*x+d)^n)^3+1/(f*g)^(1/2)*
arctan(x*g/(f*g)^(1/2))*b*ln(c)+a/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^2 + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c\left(d+ex\right)^n\right)}{f+gx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f + g*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x^2 + f), x)
```

3.264 $\int \frac{a+b\log(c(d+ex)^n)}{x^2\left(f+gx^2\right)}\,dx$

Optimal. Leaf size=290

$$-\frac{b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{3/2}}+\frac{b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{3/2}}+\frac{\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{3/2}}-\frac{\sqrt{g}}{}$$

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*
x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) - (Sqrt[g]*(a + b*Log[c*(d +
e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*(-f)^
(3/2)) - (b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt
[g]))])/(2*(-f)^(3/2)) + (b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] + d*Sqrt[g])])/(2*(-f)^(3/2))
```

Rubi [A] time = 0.315934, antiderivative size = 290, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {325, 205, 2416, 2395, 36, 29, 31, 2409, 2394, 2393, 2391}

$$-\frac{b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{3/2}}+\frac{b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{3/2}}+\frac{\sqrt{g}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{2(-f)^{3/2}}-\frac{\sqrt{g}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)),x]
```

```
[Out] (b*e*n*Log[x])/(d*f) - (b*e*n*Log[d + e*x])/(d*f) - (a + b*Log[c*(d + e*x)^
n])/(f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*
x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) - (Sqrt[g]*(a + b*Log[c*(d +
e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*(-f)^
(3/2)) - (b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt
[g]))])/(2*(-f)^(3/2)) + (b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] + d*Sqrt[g])])/(2*(-f)^(3/2))
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2(f+gx^2)}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{fx^2} - \frac{g(a+b\log(c(d+ex)^n))}{f(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}+\sqrt{g}x)}\right)dx}{f} + \frac{(ben)\int}{}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{fx} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2(-f)^{3/2}} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2(-f)^{3/2}} + \frac{(ben)\int \frac{1}{x}\,dx}{df}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} + \frac{\sqrt{g}(a+b\log(c(d+ex)^n))\log\left(\right.}{2(-f)^{3/2}}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} + \frac{\sqrt{g}(a+b\log(c(d+ex)^n))\log\left(\right.}{2(-f)^{3/2}}$$

$$= \frac{ben\log(x)}{df} - \frac{ben\log(d+ex)}{df} - \frac{a+b\log(c(d+ex)^n)}{fx} + \frac{\sqrt{g}(a+b\log(c(d+ex)^n))\log\left(\right.}{2(-f)^{3/2}}$$

Mathematica [A] time = 0.170014, size = 280, normalized size = 0.97

$$\frac{f\left(-bdf\sqrt{g}nx\,\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right) + bdf\sqrt{g}nx\,\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right) + df\sqrt{g}x\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)),x]
```

```
[Out] (f*(2*b*e*(-f)^(3/2)*n*x*(Log[x] - Log[d + e*x]) + 2*d*Sqrt[-f]*f*(a + b*Lo
g[c*(d + e*x)^n]) + d*f*Sqrt[g]*x*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] - d*f*Sqrt[g]*x*(a + b*Log[c*(d
+ e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])] - b*d*f
*Sqrt[g]*n*x*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))] +
b*d*f*Sqrt[g]*n*x*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])
)/(2*d*(-f)^(7/2)*x)
```

Maple [C] time = 0.514, size = 722, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x^2+f),x)
```

```
[Out] -b*ln((e*x+d)^n)/f/x+b/f*g/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*
g)^(1/2))*n*ln(e*x+d)-b/f*g/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f
*g)^(1/2))*ln((e*x+d)^n)+b*e*n/f/d*ln(e*x)-b*e*n*ln(e*x+d)/d/f-1/2*b*n/f*g*
```

```
ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*
g))+1/2*b*n/f*g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e
*(-f*g)^(1/2)-d*g))-1/2*b*n/f*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d
)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/f*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)
+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2/f/x-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f*g/(f*g)^(1/2
)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)/f/x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f*
g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f*g/
(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2/f*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)^2/f/x+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x-b*ln(c)/f*g/(f
*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-b*ln(c)/f/x-a/f*g/(f*g)^(1/2)*arctan(x*g/
(f*g)^(1/2))-a/f/x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^4+fx^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^4 + f*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left((ex+d)^n c\right)+a}{\left(gx^2+f\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x^2), x)
```

3.265 $\int \frac{a+b\log(c(d+ex)^n)}{x^4(f+gx^2)}\,dx$

Optimal. Leaf size=388

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{5/2}}+\frac{g\,(a+b\log\left(c(d+ex)^n\right))}{f^2x}+\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a}{2(-f)^5}$$

```
[Out] -(b*e*n)/(6*d*f*x^2) + (b*e^2*n)/(3*d^2*f*x) + (b*e^3*n*Log[x])/(3*d^3*f) -
 (b*e*g*n*Log[x])/(d*f^2) - (b*e^3*n*Log[d + e*x])/(3*d^3*f) + (b*e*g*n*Log
[d + e*x])/(d*f^2) - (a + b*Log[c*(d + e*x)^n])/(3*f*x^3) + (g*(a + b*Log[c
*(d + e*x)^n]))/(f^2*x) + (g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (g^(3/2)*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(-f)^(5/2)) - (b*g^(3/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)) + (b*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2))
```

Rubi [A] time = 0.37595, antiderivative size = 388, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {325, 205, 2416, 2395, 44, 36, 29, 31, 2409, 2394, 2393, 2391}

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2(-f)^{5/2}}+\frac{g\,(a+b\log\left(c(d+ex)^n\right))}{f^2x}+\frac{g^{3/2}\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a}{2(-f)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^4*(f + g*x^2)),x]
```


```
[Out] -(b*e*n)/(6*d*f*x^2) + (b*e^2*n)/(3*d^2*f*x) + (b*e^3*n*Log[x])/(3*d^3*f) -
 (b*e*g*n*Log[x])/(d*f^2) - (b*e^3*n*Log[d + e*x])/(3*d^3*f) + (b*e*g*n*Log
[d + e*x])/(d*f^2) - (a + b*Log[c*(d + e*x)^n])/(3*f*x^3) + (g*(a + b*Log[c
*(d + e*x)^n]))/(f^2*x) + (g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[
-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (g^(3/2)*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(-f)^(5/2)) - (b*g^(3/2)*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqr
t[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)) + (b*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2))
```


Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^4\left(f+gx^2\right)}dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{fx^4} - \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x^2} + \frac{g^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^4}dx}{f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{x^2}dx}{f^2} + \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}dx}{f^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{3fx^3} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{g^2\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\sqrt{-f}(a+b\log}{2f(\sqrt{-}}\right.}{f^2}$$

$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{3fx^3} + \frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} - \frac{g^2\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}dx}{2(-f)^{5/2}} - \frac{g^2\int \frac{a+b\log(c}{\sqrt{-f}-}}{2(-f}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log(d+ex)}{df^2} - \frac{a}{}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log(d+ex)}{df^2} - \frac{a}{}$$

$$= -\frac{ben}{6dfx^2} + \frac{be^2n}{3d^2fx} + \frac{be^3n\log(x)}{3d^3f} - \frac{begn\log(x)}{df^2} - \frac{be^3n\log(d+ex)}{3d^3f} + \frac{begn\log(d+ex)}{df^2} - \frac{a}{}$$

Mathematica [A] time = 0.348928, size = 350, normalized size = 0.9

$$\frac{1}{6}\left(-\frac{3bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{5/2}} + \frac{3bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{(-f)^{5/2}} + \frac{6g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2x} + \frac{3g^{3/2}\log\left(\frac{e(\sqrt{-f}-}{d\sqrt{g}+e\sqrt{}}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^4*(f + g*x^2)),x]
```

```
[Out] ((-6*b*e*g*n*(Log[x] - Log[d + e*x]))/(d*f^2) - (b*e*n*(d*(d - 2*e*x) - 2*e
^2*x^2*Log[x] + 2*e^2*x^2*Log[d + e*x]))/(d^3*f*x^2) - (2*(a + b*Log[c*(d +
 e*x)^n]))/(f*x^3) + (6*g*(a + b*Log[c*(d + e*x)^n]))/(f^2*x) + (3*g^(3/2)*
(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(-f)^(5/2) - (3*g^(3/2)*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(-f)^(5/2) - (3*b*g^(3/2)*n*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) + (3*b
*g^(3/2)*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(
5/2))/6
```

Maple [C] time = 0.602, size = 983, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^4/(g*x^2+f),x)
```

```
[Out] b*g^2/f^2/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x
+d)^n)+1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/x^3-b*g^2/f^2/(f*g)^(1/2)*arctan(
1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*e*n/f^2*g/d*ln(e*x)+1/
2*b*n*g^2/f^2*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(
-f*g)^(1/2)+d*g))-1/2*b*n*g^2/f^2*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)
+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/6*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2/f/x^3-1/3*b*ln(c)/f/x^3+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+a/f^2*g/x+b*l
n(c)/f^2*g/x+b*ln((e*x+d)^n)/f^2*g/x+a/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)
^(1/2))+1/2*b*n*g^2/f^2/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(
e*(-f*g)^(1/2)+d*g))-1/2*b*n*g^2/f^2/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(
e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/3*b*e^3*n/f/d^3*ln(e*x)+1/6*I*b*Pi*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f/x^3-1/2*I*b*Pi*csgn(I*c*(e*x+
d)^n)^3/f^2*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*g/x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n
)^2/f^2*g/x-1/3*b/f/x^3*ln((e*x+d)^n)+b*ln(c)/f^2*g^2/(f*g)^(1/2)*arctan(x*
g/(f*g)^(1/2))-1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/x^3-1/2
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/x-1/3*a/f/x^3-1/6*b*e*n/d/f/x^2+1/3*b*e
^2*n/d^2/f/x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2
*g^2/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/x-1/3*b*e^3*n*ln(e*x+d)/d^3/f+b*e*g*n*ln(e*x
+d)/d/f^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{gx^6+fx^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g*x^6 + f*x^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**4/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^{n}c\right)+a}{\left(gx^{2}+f\right)x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^4/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)*x^4), x)
```

3.266 $\int \frac{x^5(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=417

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^3}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^3}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^3\left(f+gx^2\right)}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b}{g^3}$$

```
[Out] (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2) + (b*d*e*f^(3/2)*n*ArcTan[(Sqrt[g]*
x)/Sqrt[f]])/(2*g^(5/2)*(e^2*f + d^2*g)) - (b*d^2*n*Log[d + e*x])/(2*e^2*g^
2) + (b*e^2*f^2*n*Log[d + e*x])/(2*g^3*(e^2*f + d^2*g)) + (x^2*(a + b*Log[c
*(d + e*x)^n]))/(2*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(2*g^3*(f + g*x^
2)) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[
-f] + d*Sqrt[g])])/g^3 - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/g^3 - (b*e^2*f^2*n*Log[f + g*x^2])/(4
*g^3*(e^2*f + d^2*g)) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^3 - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/g^3
```

Rubi [A] time = 0.487262, antiderivative size = 417, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {266, 43, 2416, 2395, 2413, 706, 31, 635, 205, 260, 2394, 2393, 2391}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{g^3}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{g^3}-\frac{f^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^3\left(f+gx^2\right)}-\frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b}{g^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*d*n*x)/(2*e*g^2) - (b*n*x^2)/(4*g^2) + (b*d*e*f^(3/2)*n*ArcTan[(Sqrt[g]*
x)/Sqrt[f]])/(2*g^(5/2)*(e^2*f + d^2*g)) - (b*d^2*n*Log[d + e*x])/(2*e^2*g^
2) + (b*e^2*f^2*n*Log[d + e*x])/(2*g^3*(e^2*f + d^2*g)) + (x^2*(a + b*Log[c
*(d + e*x)^n]))/(2*g^2) - (f^2*(a + b*Log[c*(d + e*x)^n]))/(2*g^3*(f + g*x^
2)) - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[
-f] + d*Sqrt[g])])/g^3 - (f*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/g^3 - (b*e^2*f^2*n*Log[f + g*x^2])/(4
*g^3*(e^2*f + d^2*g)) - (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^3 - (b*f*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/g^3
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^5 (a + b\log(c(d+ex)^n))}{\left(f+gx^2\right)^2} dx = \int \left(\frac{x (a + b\log(c(d+ex)^n))}{g^2} + \frac{f^2 x (a + b\log(c(d+ex)^n))}{g^2\left(f+gx^2\right)^2} - \frac{2fx (a + b\log(c(d+\right.$$

$$= \frac{\int x (a + b\log(c(d+ex)^n))\,dx}{g^2} - \frac{(2f)\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}dx}{g^2} + \frac{f^2 \int \frac{x(a+b\log(c(d+ex)^n)}{\left(f+gx^2\right)^2}}{g^2}$$

$$= \frac{x^2 (a + b\log(c(d+ex)^n))}{2g^2} - \frac{f^2 (a + b\log(c(d+ex)^n))}{2g^3\left(f+gx^2\right)} - \frac{(2f)\int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \right.}{g^2}$$

$$= \frac{x^2 (a + b\log(c(d+ex)^n))}{2g^2} - \frac{f^2 (a + b\log(c(d+ex)^n))}{2g^3\left(f+gx^2\right)} + \frac{f\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}dx}{g^{5/2}} - \frac{f}{}$$

$$= \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} - \frac{bd^2 n\log(d+ex)}{2e^2g^2} + \frac{be^2f^2n\log(d+ex)}{2g^3\left(e^2f+d^2g\right)} + \frac{x^2 (a + b\log(c(d+ex)^n)}{2g^2}$$

$$= \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} + \frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{5/2}\left(e^2f+d^2g\right)} - \frac{bd^2n\log(d+ex)}{2e^2g^2} + \frac{be^2f^2n\log(d+ex)}{2g^3\left(e^2f+d^2g\right)} +$$

$$= \frac{bdnx}{2eg^2} - \frac{bnx^2}{4g^2} + \frac{bdef^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{5/2}\left(e^2f+d^2g\right)} - \frac{bd^2n\log(d+ex)}{2e^2g^2} + \frac{be^2f^2n\log(d+ex)}{2g^3\left(e^2f+d^2g\right)} +$$

Mathematica [C] time = 1.18919, size = 530, normalized size = 1.27

$$\frac{bn\left(-4f\left(\text{PolyLog}\left(2,-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)\right)-4f\left(\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e(\sqrt{}}{e\sqrt{}}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - (2*f^2*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) - 4*f*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])*Log[f + g*x^2] + b*n*((g*(e*x*(2*d - e*x) - 2*(d^2
 - e^2*x^2)*Log[d + e*x]))/e^2 + (f^(3/2)*(I*Sqrt[g]*(d + e*x)*Log[d + e*x]
 - e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d
*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*f^(3/2)*(-(Sqrt[g]*(d + e*x)*Log[d
```

```
+ e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f
] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[
f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d
 + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] -
I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))
/(e*Sqrt[f] + I*d*Sqrt[g])]))))/(4*g^3)
```

Maple [C] time = 0.462, size = 1008, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*ln(c)/g^2*x^2+1/2*b*e*n/g^2*f^2/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*
g/(f*g)^(1/2))-b*n*f/g^3*ln(e*x+d)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f
*g)^(1/2)-d*g))-b*n*f/g^3*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-
f*g)^(1/2)+d*g))+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
*f/g^3*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*f^2/g^3/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x^2-1/2*b*ln((e*x
+d)^n)*f^2/g^3/(g*x^2+f)-b*ln((e*x+d)^n)*f/g^3*ln(g*x^2+f)-b*n*f/g^3*dilog(
(e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-b*n*f/g^3*dilog((e*(-f
*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*ln((e*x+d)^n)/g^2*x^2-
a*f/g^3*ln(g*x^2+f)-1/2*a*f^2/g^3/(g*x^2+f)+1/2*a/g^2*x^2-1/2*I*b*Pi*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^3*ln(g*x^2+f)-1/2*I*b*Pi*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2*f/g^3*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2*f^2/g^3/(g*x^2+f)+b*n*f/g^3*ln(e*x+d)*ln(g*x^2+f)-1/4*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*x^2-1/4*I*b*Pi*csgn(I*c
)*csgn(I*c*(e*x+d)^n)^2*f^2/g^3/(g*x^2+f)-b*ln(c)*f/g^3*ln(g*x^2+f)-1/2*b*l
n(c)*f^2/g^3/(g*x^2+f)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^3*ln(g*x^2+f)+1
/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f^2/g^3/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2/g^2*x^2-1/2*b/e^2*n/g/(d^2*g+e^2*f)*ln(e*x+d)*d^4-1/2*b*n
/g^2/(d^2*g+e^2*f)*ln(e*x+d)*d^2*f+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2/g^2*x^2-1/4*b*n*x^2/g^2+1/2*b*d*n*x/e/g^2+1/2*b*e^2*f^2*n*ln(e*x
+d)/g^3/(d^2*g+e^2*f)-1/4*b*e^2*f^2*n*ln(g*x^2+f)/g^3/(d^2*g+e^2*f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}\,a\left(\frac{f^2}{g^4x^2+fg^3}-\frac{x^2}{g^2}+\frac{2\,f\log\left(gx^2+f\right)}{g^3}\right)+b\int\frac{x^5\log\left((ex+d)^n\right)+x^5\log\left(c\right)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(f^2/(g^4*x^2 + f*g^3) - x^2/g^2 + 2*f*log(g*x^2 + f)/g^3) + b*integ
rate((x^5*log((e*x + d)^n) + x^5*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^5\log\left((ex+d)^nc\right)+ax^5}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^5*log((e*x + d)^n*c) + a*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^5}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^5/(g*x^2 + f)^2, x)
```

3.267 $\int \frac{x^3(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=344

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+\right.\right.}{2g^2}$$

```
[Out] -(b*d*e*Sqrt[f]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*g^(3/2)*(e^2*f + d^2*g))
- (b*e^2*f*n*Log[d + e*x])/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*Log[c*(d + e
*x)^n]))/(2*g^2*(f + g*x^2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + ((a + b*Log[c*(d + e*x)
^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) + (b
*e^2*f*n*Log[f + g*x^2])/(4*g^2*(e^2*f + d^2*g)) + (b*n*PolyLog[2, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2) + (b*n*PolyLog[2, (Sqrt[g
]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2)
```

Rubi [A] time = 0.407449, antiderivative size = 344, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {266, 43, 2416, 2413, 706, 31, 635, 205, 260, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2g^2}+\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{2g^2\left(f+gx^2\right)}+\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+\right.\right.}{2g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```



```
[Out] -(b*d*e*Sqrt[f]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*g^(3/2)*(e^2*f + d^2*g))
- (b*e^2*f*n*Log[d + e*x])/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*Log[c*(d + e
*x)^n]))/(2*g^2*(f + g*x^2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f]
 - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + ((a + b*Log[c*(d + e*x)
^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) + (b
*e^2*f*n*Log[f + g*x^2])/(4*g^2*(e^2*f + d^2*g)) + (b*n*PolyLog[2, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2) + (b*n*PolyLog[2, (Sqrt[g
]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2)
```


Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
```

```
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3 (a+b\log(c(d+ex)^n))}{\left(f+gx^2\right)^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))}{g\left(f+gx^2\right)^2}+\frac{x(a+b\log(c(d+ex)^n))}{g\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))}{\left(f+gx^2\right)^2}\,dx}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))}{2g^2\left(f+gx^2\right)} + \frac{\int \left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx}{g} - \frac{(befn)\int \frac{\cdots}{(d+ex)(\cdots}}{2g^2}$$

$$= \frac{f(a+b\log(c(d+ex)^n))}{2g^2\left(f+gx^2\right)} - \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}} + \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{3/2}} - \frac{(befn)\int \frac{dg-e\cdots}{f+gx\cdots}}{2g^2\left(e^2f+d\cdots\right.}$$

$$= -\frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)} + \frac{f(a+b\log(c(d+ex)^n))}{2g^2\left(f+gx^2\right)} + \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e\left(\sqrt{-f}-\sqrt{\cdots}\right)}{e\sqrt{-f}+d\cdots}\right.}{2g^2}$$

$$= -\frac{bde\sqrt{f}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)} + \frac{f(a+b\log(c(d+ex)^n))}{2g^2\left(f+gx^2\right)} + \frac{(a+b\log(c\cdots}{\cdots}$$

$$= -\frac{bde\sqrt{f}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2g^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2fn\log(d+ex)}{2g^2\left(e^2f+d^2g\right)} + \frac{f(a+b\log(c(d+ex)^n))}{2g^2\left(f+gx^2\right)} + \frac{(a+b\log(c\cdots}{\cdots}$$

Mathematica [C] time = 0.881506, size = 455, normalized size = 1.32

$$\frac{bn\left(2\left(\text{PolyLog}\left(2,-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)\right)+2\left(\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{e\sqrt{f}+id\sqrt{g}}\right.\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) + 2*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*Log[f + g*x^2] + b*n*((Sqrt[f]*((-I
)*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f]
- Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[
f]*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt
[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 2*
(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] +
PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*(Log[d
+ e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog
[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])))/(4*g^2)
```

Maple [C] time = 0.408, size = 726, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*ln((e*x+d)^n)/g^2*ln(g*x^2+f)+1/2*b*ln((e*x+d)^n)*f/g^2/(g*x^2+f)-1/2
*b*n/g^2*ln(e*x+d)*ln(g*x^2+f)+1/2*b*n/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(
e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/g^2*ln(e*x+d)*ln((e*(-f*g)^(1/2)+
g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b*n/g^2*dilog((e*(-f*g)^(1/2)-g*(e
*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/2*b*n/g^2*dilog((e*(-f*g)^(1/2)+g*(e*x+d
)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*e^2*f*n*ln(e*x+d)/g^2/(d^2*g+e^2*f)+1/4*
b*e^2*f*n*ln(g*x^2+f)/g^2/(d^2*g+e^2*f)-1/2*b*e*n*f/g/(d^2*g+e^2*f)*d/(f*g)
^(1/2)*arctan(x*g/(f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)*f/g^2/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*f
/g^2/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*f/g^2/(g*x^2+f)-1/4*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*ln(g*x^2+f)-1/4*I*b*Pi*
csgn(I*c*(e*x+d)^n)^3/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2/g^2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^
2*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*f/g^2/(g*x
^2+f)+1/2*b*ln(c)/g^2*ln(g*x^2+f)+1/2*b*ln(c)*f/g^2/(g*x^2+f)+1/2*a/g^2*ln(
g*x^2+f)+1/2*a*f/g^2/(g*x^2+f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,a\left(\frac{f}{g^3x^2+fg^2}+\frac{\log\left(gx^2+f\right)}{g^2}\right)+b\int\frac{x^3\log\left((ex+d)^n\right)+x^3\log\left(c\right)}{g^2x^4+2\,fgx^2+f^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(f/(g^3*x^2 + f*g^2) + log(g*x^2 + f)/g^2) + b*integrate((x^3*log((e*
x + d)^n) + x^3*log(c))/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^3\log\left((ex+d)^nc\right)+ax^3}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*log((e*x + d)^n*c) + a*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^3}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3/(g*x^2 + f)^2, x)
```

3.268 $\int \frac{x(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=139

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}-\frac{be^2n\log\left(f+gx^2\right)}{4g\left(d^2g+e^2f\right)}+\frac{be^2n\log(d+ex)}{2g\left(d^2g+e^2f\right)}+\frac{bden\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2\sqrt{f}\sqrt{g}\left(d^2g+e^2f\right)}$$

```
[Out] (b*d*e*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*Sqrt[f]*Sqrt[g]*(e^2*f + d^2*g)) +
 (b*e^2*n*Log[d + e*x])/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d + e*x)^n])/
(2*g*(f + g*x^2)) - (b*e^2*n*Log[f + g*x^2])/(4*g*(e^2*f + d^2*g))
```

Rubi [A] time = 0.0783081, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.24, Rules used = {2413, 706, 31, 635, 205, 260}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2g\left(f+gx^2\right)}-\frac{be^2n\log\left(f+gx^2\right)}{4g\left(d^2g+e^2f\right)}+\frac{be^2n\log(d+ex)}{2g\left(d^2g+e^2f\right)}+\frac{bden\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2\sqrt{f}\sqrt{g}\left(d^2g+e^2f\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```


```
[Out] (b*d*e*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*Sqrt[f]*Sqrt[g]*(e^2*f + d^2*g)) +
 (b*e^2*n*Log[d + e*x])/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d + e*x)^n])/
(2*g*(f + g*x^2)) - (b*e^2*n*Log[f + g*x^2])/(4*g*(e^2*f + d^2*g))
```


Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x\,(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx &= -\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}+\frac{(ben)\int \frac{1}{(d+ex)(f+gx^2)}\,dx}{2g}\\
&= -\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}+\frac{(ben)\int \frac{dg-egx}{f+gx^2}\,dx}{2g(e^2f+d^2g)}+\frac{(be^3n)\int \frac{1}{d+ex}\,dx}{2g(e^2f+d^2g)}\\
&= \frac{be^2n\log(d+ex)}{2g(e^2f+d^2g)}-\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}+\frac{(bden)\int \frac{1}{f+gx^2}\,dx}{2(e^2f+d^2g)}-\frac{(be^2n)\int \frac{x}{f+gx^2}\,dx}{2(e^2f+d^2g)}\\
&= \frac{bden\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2\sqrt{f}\sqrt{g}(e^2f+d^2g)}+\frac{be^2n\log(d+ex)}{2g(e^2f+d^2g)}-\frac{a+b\log(c(d+ex)^n)}{2g(f+gx^2)}-\frac{be^2n\log(f+gx^2)}{4g(e^2f+d^2g)}
\end{aligned}$$

Mathematica [A] time = 0.160071, size = 165, normalized size = 1.19

$$\frac{2bde\sqrt{g}n(f+gx^2)\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)-\sqrt{f}\left(2ad^2g+2ae^2f+2b(d^2g+e^2f)\log(c(d+ex)^n)-2be^2n(f+gx^2)\log(d+ex)+b\right.}{4\sqrt{f}g(f+gx^2)(d^2g+e^2f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (2*b*d*e*Sqrt[g]*n*(f + g*x^2)*ArcTan[(Sqrt[g]*x)/Sqrt[f]] - Sqrt[f]*(2*a*e
^2*f + 2*a*d^2*g - 2*b*e^2*n*(f + g*x^2)*Log[d + e*x] + 2*b*(e^2*f + d^2*g)
*Log[c*(d + e*x)^n] + b*e^2*f*n*Log[f + g*x^2] + b*e^2*g*n*x^2*Log[f + g*x^
2]))/(4*Sqrt[f]*g*(e^2*f + d^2*g)*(f + g*x^2))
```

Maple [C] time = 0.529, size = 765, normalized size = 5.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x)
```

```
[Out] -1/2*b/g/(g*x^2+f)*ln((e*x+d)^n)+1/4*(-I*Pi*b*e^2*f*csgn(I*c)*csgn(I*c*(e*x
+d)^n)^2-I*Pi*b*d^2*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*f*csgn(I*c
)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*e^2*f*csgn(I*c*(e*x+d)^n)^3+
I*Pi*b*d^2*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi*b*d^2*g*c
sgn(I*c*(e*x+d)^n)^3-I*Pi*b*e^2*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I
```

```
*Pi*b*d^2*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+2*ln(e*x+d)*b*e^2*g*n*x
^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n)*x+4*d*e*f*g*_R+b*d*e*n),_R
=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+b^2*e^2*n^2))*d^2*g^3
*x^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n)*x+4*d*e*f*g*_R+b*d*e*n),
_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*g*n*_Z+b^2*e^2*n^2))*e^2*f
*g^2*x^2+2*ln(e*x+d)*b*e^2*f*n+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n
)*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*
g*n*_Z+b^2*e^2*n^2))*d^2*f*g^2+sum(_R*ln(((-d^2*g^2+3*e^2*f*g)*_R+3*b*e^2*n
)*x+4*d*e*f*g*_R+b*d*e*n),_R=RootOf((d^2*f*g^3+e^2*f^2*g^2)*_Z^2+2*b*e^2*f*
g*n*_Z+b^2*e^2*n^2))*e^2*f^2*g-2*ln(c)*b*d^2*g-2*ln(c)*b*e^2*f-2*a*d^2*g-2*
a*e^2*f)/(g*x^2+f)/g/(d^2*g+e^2*f)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.95012, size = 817, normalized size = 5.88

$$\left[-\frac{2\,ae^2f^2 + 2\,ad^2fg + \left(bdegnx^2 + bdefn\right)\sqrt{-fg}\log\left(\frac{gx^2-2\,\sqrt{-fg}x-f}{gx^2+f}\right) + \left(be^2fgnx^2 + be^2f^2n\right)\log\left(gx^2+f\right) - 2\left(be^2fgr\right.}{4\left(e^2f^3g + d^2f^2g^2 + \left(e^2f^2g^2 + d^2fg^3\right)x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*e^2*f^2 + 2*a*d^2*f*g + (b*d*e*g*n*x^2 + b*d*e*f*n)*sqrt(-f*g)*l
og((g*x^2 - 2*sqrt(-f*g)*x - f)/(g*x^2 + f)) + (b*e^2*f*g*n*x^2 + b*e^2*f^2
*n)*log(g*x^2 + f) - 2*(b*e^2*f*g*n*x^2 - b*d^2*f*g*n)*log(e*x + d) + 2*(b*
e^2*f^2 + b*d^2*f*g)*log(c))/(e^2*f^3*g + d^2*f^2*g^2 + (e^2*f^2*g^2 + d^2*
f*g^3)*x^2), -1/4*(2*a*e^2*f^2 + 2*a*d^2*f*g - 2*(b*d*e*g*n*x^2 + b*d*e*f*n
)*sqrt(f*g)*arctan(sqrt(f*g)*x/f) + (b*e^2*f*g*n*x^2 + b*e^2*f^2*n)*log(g*x
^2 + f) - 2*(b*e^2*f*g*n*x^2 - b*d^2*f*g*n)*log(e*x + d) + 2*(b*e^2*f^2 + b
*d^2*f*g)*log(c))/(e^2*f^3*g + d^2*f^2*g^2 + (e^2*f^2*g^2 + d^2*f*g^3)*x^2)
]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.37988, size = 294, normalized size = 2.12

$$\frac{bdn\arctan\left(\frac{gx}{\sqrt{fg}}\right)e}{2\left(d^2g+fe^2\right)\sqrt{fg}}-\frac{bne^2\log\left(gx^2+f\right)}{4\left(d^2g^2+fge^2\right)}+\frac{bgnx^2e^2\log\left(xe+d\right)-bd^2gn\log\left(xe+d\right)-2\,bd^2g\log\left(c\right)-2\,ad^2g-2\,bfe^2\,\text{lo}}{2\left(d^2g^3x^2+fg^2x^2e^2+d^2fg^2+f^2ge^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] 1/2*b*d*n*arctan(g*x/sqrt(f*g))*e/((d^2*g + f*e^2)*sqrt(f*g)) - 1/4*b*n*e^2
*log(g*x^2 + f)/(d^2*g^2 + f*g*e^2) + 1/2*(b*g*n*x^2*e^2*log(x*e + d) - b*d
^2*g*n*log(x*e + d) - 2*b*d^2*g*log(c) - 2*a*d^2*g - 2*b*f*e^2*log(c) - 2*a
*f*e^2)/(d^2*g^3*x^2 + f*g^2*x^2*e^2 + d^2*f*g^2 + f^2*g*e^2) - 1/2*(b*d^2*
g*log(c) + a*d^2*g + b*f*e^2*log(c) + a*f*e^2)/((d^2*g + f*e^2)*(g*x^2 + f)
*g)
```

3.269 $\int \frac{a+b\log(c(d+ex)^n)}{x(f+gx^2)^2}\,dx$

Optimal. Leaf size=383

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d}{2f^2}$$

```
[Out] -(b*d*e*Sqrt[g]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f^(3/2)*(e^2*f + d^2*g))
- (b*e^2*n*Log[d + e*x])/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d + e*x)^n])
/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 - ((a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*f^2) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x)
)/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b*e^2*n*Log[f + g*x^2])/(4*f*(e^2*f
 + d^2*g)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g])
)])/(2*f^2) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f^2) + (b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```

Rubi [A] time = 0.453394, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {266, 44, 2416, 2394, 2315, 2413, 706, 31, 635, 205, 260, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2f^2}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2f^2}+\frac{bn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^2}-\frac{\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)^2),x]
```


```
[Out] -(b*d*e*Sqrt[g]*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f^(3/2)*(e^2*f + d^2*g))
- (b*e^2*n*Log[d + e*x])/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d + e*x)^n])
/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^2 - ((a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*f^2) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x)
)/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b*e^2*n*Log[f + g*x^2])/(4*f*(e^2*f
 + d^2*g)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g])
)])/(2*f^2) - (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f^2) + (b*n*PolyLog[2, 1 + (e*x)/d])/f^2
```


Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x} - \frac{gx\left(a+b\log\left(c(d+ex)^n\right)\right)}{f\left(f+gx^2\right)^2} - \frac{gx\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2\left(f+gx^2\right)}\right) dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))}{\left(f+gx^2\right)^2}\,dx}{f}$$

$$= \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{g\int\left(-\frac{a+b\log(c(d+ex)^n)}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b}{2\sqrt{g}}\right.}{f^2}$$

$$= \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} + \frac{bn\text{Li}_2\left(1+\frac{ex}{d}\right)}{f^2} + \frac{\sqrt{g}\int \frac{a+b}{}}{}$$

$$= -\frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2} - \frac{(a+b}{}$$

$$= -\frac{bde\sqrt{g}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log}{f^2}$$

$$= -\frac{bde\sqrt{g}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{3/2}\left(e^2f+d^2g\right)} - \frac{be^2n\log(d+ex)}{2f\left(e^2f+d^2g\right)} + \frac{a+b\log\left(c(d+ex)^n\right)}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log}{f^2}$$

Mathematica [C] time = 1.14459, size = 521, normalized size = 1.36

$$bn\left(-2\left(\text{PolyLog}\left(2,-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)\right)-2\left(\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\right.}{e\sqrt{f}+i}\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x*(f + g*x^2)^2),x]
```

```
[Out] (a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])/(2*f^2 + 2*f*g*x^2) + (Log[x]
*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/f^2 - ((a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])*Log[f + g*x^2])/(2*f^2) + (b*n*((Sqrt[f]*((-I)*Sq
rt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sq
rt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(
I*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f]
+ Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 2*(Log
[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + Poly
Log[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - 2*(Log[d + e*
x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2,
(I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 4*(Log[-((e*x)/d)]*Log[
```

```
d + e*x] + PolyLog[2, 1 + (e*x)/d])))/(4*f^2)
```

Maple [C] time = 0.423, size = 910, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x/(g*x^2+f)^2,x)
```

```
[Out] -1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n
)^3/f^2*ln(g*x^2+f)-1/2*b*ln(c)/f^2*ln(g*x^2+f)+1/2*b*ln(c)/f/(g*x^2+f)+1/4
*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/(g*x^2+f)-1/2*b*e*n/f*g/(d^2*g+e^
2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-b*n/f^2*ln(x)*ln((e*x+d)/d)-1/2*
I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*ln(x)-1/2*a/f^2*ln(g*x^2+f)+1/2*a/f/(g*x^2
+f)+1/2*b*ln((e*x+d)^n)/f/(g*x^2+f)+b*ln((e*x+d)^n)/f^2*ln(x)-1/2*b*ln((e*x
+d)^n)/f^2*ln(g*x^2+f)-1/2*b*n/f^2*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*
(-f*g)^(1/2)+d*g))-1/2*b*n/f^2*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*
g)^(1/2)-d*g))+1/2*b*n/f^2*ln(e*x+d)*ln(g*x^2+f)-1/2*b*n/f^2*ln(e*x+d)*ln((
e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b*n/f^2*ln(e*x+d)*l
n((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+a/f^2*ln(x)+b*ln(c)/
f^2*ln(x)-b*n/f^2*dilog((e*x+d)/d)-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)/f^2*ln(x)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)/f/(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)/f^2*ln(g*x^2+f)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(
x)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(g*x^2+f)+1/4*I
*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f/(g*x^2+f)+1/2*I*b*Pi*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2*ln(x)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2/f^2*ln(g*x^2+f)-1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)+1/4*b*e^2
*n*ln(g*x^2+f)/f/(d^2*g+e^2*f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{1}{fgx^2+f^2}-\frac{\log\left(gx^2+f\right)}{f^2}+\frac{2\log\left(x\right)}{f^2}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{g^2x^5+2\,fgx^3+f^2x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(1/(f*g*x^2 + f^2) - log(g*x^2 + f)/f^2 + 2*log(x)/f^2) + b*integrate
((log((e*x + d)^n) + log(c))/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(ex+d\right)^n c\right)+a}{g^2x^5+2\,fgx^3+f^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left((ex+d)^n c\right) + a}{\left(gx^2 + f\right)^2 x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)^2*x), x)
```

3.270 $\int \frac{a+b\log(c(d+ex)^n)}{x^3(f+gx^2)^2}\,dx$

Optimal. Leaf size=460

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{f^3}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)}-\frac{2g}{}$$

```
[Out] -(b*e*n)/(2*d*f^2*x) + (b*d*e*g^(3/2)*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f^(
5/2)*(e^2*f + d^2*g)) - (b*e^2*n*Log[x])/(2*d^2*f^2) + (b*e^2*n*Log[d + e*x
])/(2*d^2*f^2) + (b*e^2*g*n*Log[d + e*x])/(2*f^2*(e^2*f + d^2*g)) - (a + b*
Log[c*(d + e*x)^n])/(2*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n]))/(2*f^2*(f
+ g*x^2)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 + (g*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/f^3 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*
Sqrt[-f] - d*Sqrt[g])])/f^3 - (b*e^2*g*n*Log[f + g*x^2])/(4*f^2*(e^2*f + d^
2*g)) + (b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])
/f^3 + (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3
 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```

Rubi [A] time = 0.516832, antiderivative size = 460, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 14, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.518, Rules used = {266, 44, 2416, 2395, 2394, 2315, 2413, 706, 31, 635, 205, 260, 2393, 2391}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{f^3}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{f^3}-\frac{2bgn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{f^3}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)}-\frac{2g}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)^2),x]
```


```
[Out] -(b*e*n)/(2*d*f^2*x) + (b*d*e*g^(3/2)*n*ArcTan[(Sqrt[g]*x)/Sqrt[f]])/(2*f^(
5/2)*(e^2*f + d^2*g)) - (b*e^2*n*Log[x])/(2*d^2*f^2) + (b*e^2*n*Log[d + e*x
])/(2*d^2*f^2) + (b*e^2*g*n*Log[d + e*x])/(2*f^2*(e^2*f + d^2*g)) - (a + b*
Log[c*(d + e*x)^n])/(2*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n]))/(2*f^2*(f
+ g*x^2)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/f^3 + (g*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/f^3 + (g*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*
Sqrt[-f] - d*Sqrt[g])])/f^3 - (b*e^2*g*n*Log[f + g*x^2])/(4*f^2*(e^2*f + d^
2*g)) + (b*g*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])
/f^3 + (b*g*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3
 - (2*b*g*n*PolyLog[2, 1 + (e*x)/d])/f^3
```


Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{x^3\left(f+gx^2\right)^2}\,dx=\int\left(\frac{a+b\log\left(c(d+ex)^n\right)}{f^2x^3}-\frac{2g\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3x}+\frac{g^2x\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^2\left(f+gx^2\right)^2}+\frac{2g^2\right.$$

$$=\frac{\int\frac{a+b\log(c(d+ex)^n)}{x^3}\,dx}{f^2}-\frac{(2g)\int\frac{a+b\log(c(d+ex)^n)}{x}\,dx}{f^3}+\frac{\left(2g^2\right)\int\frac{x(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{f^3}+\frac{g^2\int\frac{x(a+b\right.}{(}$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)}-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}+$$

$$=-\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2}-\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f^2\left(f+gx^2\right)}-\frac{2g\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{f^3}-$$

$$=-\frac{ben}{2df^2x}-\frac{be^2n\log(x)}{2d^2f^2}+\frac{be^2n\log(d+ex)}{2d^2f^2}+\frac{be^2gn\log(d+ex)}{2f^2\left(e^2f+d^2g\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{2f^2x^2}-\frac{g}{}$$

$$=-\frac{ben}{2df^2x}+\frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)}-\frac{be^2n\log(x)}{2d^2f^2}+\frac{be^2n\log(d+ex)}{2d^2f^2}+\frac{be^2gn\log(d+ex)}{2f^2\left(e^2f+d^2g\right)}-$$

$$=-\frac{ben}{2df^2x}+\frac{bdeg^{3/2}n\tan^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{2f^{5/2}\left(e^2f+d^2g\right)}-\frac{be^2n\log(x)}{2d^2f^2}+\frac{be^2n\log(d+ex)}{2d^2f^2}+\frac{be^2gn\log(d+ex)}{2f^2\left(e^2f+d^2g\right)}-$$

Mathematica [C] time = 1.32859, size = 596, normalized size = 1.3

$$\frac{bn\left(4g\left(\text{PolyLog}\left(2,-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}+i\sqrt{g}x\right)}{e\sqrt{f}-id\sqrt{g}}\right)\right)+4g\left(\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}\right.}{e\sqrt{f}+id\sqrt{}}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^3*(f + g*x^2)^2),x]
```

```
[Out] ((-2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/x^2 - (2*f*g*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(f + g*x^2) - 8*g*Log[x]*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n]) + 4*g*(a - b*n*Log[d + e*x] + b*Log[c*(d
 + e*x)^n])*Log[f + g*x^2] + b*n*((-2*f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^
2*x^2)*Log[d + e*x]))/(d^2*x^2) + (I*Sqrt[f]*g*(Sqrt[g]*(d + e*x)*Log[d + e
*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f]
- I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)
*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e
*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*g*(Log[d + e*x]*Log[(e
*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqr
t[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 4*g*(Log[d + e*x]*Log[(e*(Sqr
t[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d
+ e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x] + P
olyLog[2, 1 + (e*x)/d])))/(4*f^3)
```

Maple [C] time = 0.431, size = 1165, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x)
```

```
[Out] -1/2*b*e^2*n*ln(x)/d^2/f^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2/f^2*g/(g*x^2+f)+1/2*b*e*n/f^2*g^2/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g
/(f*g)^(1/2))+2*b*n/f^3*g*ln(x)*ln((e*x+d)/d)-1/2*b*ln((e*x+d)^n)/f^2/x^2-1
/2*b*ln(c)/f^2/x^2-1/2*a/f^2/x^2-1/2*b*ln(c)/f^2*g/(g*x^2+f)+b*ln(c)/f^3*g*
ln(g*x^2+f)-2*b*ln((e*x+d)^n)/f^3*g*ln(x)-1/2*b*ln((e*x+d)^n)/f^2*g/(g*x^2+
f)+b*ln((e*x+d)^n)/f^3*g*ln(g*x^2+f)+2*b*n/f^3*g*dilog((e*x+d)/d)-2*b*ln(c)
/f^3*g*ln(x)+b*n/f^3*g*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g
)^(1/2)+d*g))-b*n/f^3*g*ln(e*x+d)*ln(g*x^2+f)+1/2*b*e^4*n/f/(d^2*g+e^2*f)/d
^2*ln(e*x+d)-I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-I*b*Pi*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(x)-1/4*I*b*Pi*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^2/f^2*g/(g*x^2+f)+a/f^3*g*ln(g*x^2+f)-1/2*a/f^2*g/(g*x^2+f)+b
*n/f^3*g*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+b*n/f^3
*g*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-2*a/f^3*g*ln(
x)+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^3*g*ln(g*x^2+f)+1/4
*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2/x^2+b*n/f^3*g*ln(e*x+d)*ln((e*(-f*g)^(1/2
)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)/f^2/x^2+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f
^3*g*ln(g*x^2+f)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x^2
+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2/f^2/x^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(g*x^2+f
)+I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^3*g*ln(x)+I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(x)-1/2*b*e*n/d/f^2/x-1/2*I*b*Pi*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^3*g*ln(g*x^2+f)+1/4*I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/(g*x^2+f)+b*e^2*g*n*ln(e*x+d)/
f^2/(d^2*g+e^2*f)-1/4*b*e^2*g*n*ln(g*x^2+f)/f^2/(d^2*g+e^2*f)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}\,a\left(\frac{2\,gx^2+f}{f^2gx^4+f^3x^2}-\frac{2\,g\log\left(gx^2+f\right)}{f^3}+\frac{4\,g\log\left(x\right)}{f^3}\right)+b\int\frac{\log\left(\left(ex+d\right)^n\right)+\log\left(c\right)}{g^2x^7+2\,fgx^5+f^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*((2*g*x^2 + f)/(f^2*g*x^4 + f^3*x^2) - 2*g*log(g*x^2 + f)/f^3 + 4*g*
log(x)/f^3) + b*integrate((log((e*x + d)^n) + log(c))/(g^2*x^7 + 2*f*g*x^5
+ f^2*x^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^7+2\,fgx^5+f^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^7 + 2*f*g*x^5 + f^2*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**3/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx^2+f\right)^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^3/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)^2*x^3), x)
```

3.271 $\int \frac{x^4(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=534

$$-\frac{3b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4g^{5/2}}+\frac{3b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4g^{5/2}}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{f\left(a+b\log\left(c(d\right.\right.}{4g^{5/2}\left(\sqrt{-f}+\right.}$$

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 - (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g]
)*g^(5/2)) + (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) +
(b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f*(a + b*Log[c*(d + e*x)^n]))/(
4*g^(5/2)*(Sqrt[-f] - Sqrt[g]*x)) + (f*(a + b*Log[c*(d + e*x)^n]))/(4*g^(5/
2)*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt
[-f] + d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*L
og[Sqrt[-f] + Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f
]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d
*Sqrt[g])])/(4*g^(5/2)) - (3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/
(e*Sqrt[-f] - d*Sqrt[g]))])/(4*g^(5/2)) + (3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2))
```

Rubi [A] time = 0.929954, antiderivative size = 534, normalized size of antiderivative = 1., number of steps used = 31, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {288, 321, 205, 2416, 2389, 2295, 2409, 2395, 36, 31, 2394, 2393, 2391}

$$-\frac{3b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4g^{5/2}}+\frac{3b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4g^{5/2}}-\frac{f\left(a+b\log\left(c(d+ex)^n\right)\right)}{4g^{5/2}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{f\left(a+b\log\left(c(d\right.\right.}{4g^{5/2}\left(\sqrt{-f}+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (a*x)/g^2 - (b*n*x)/g^2 - (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g]
)*g^(5/2)) + (b*e*f*n*Log[d + e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) +
(b*(d + e*x)*Log[c*(d + e*x)^n])/(e*g^2) - (f*(a + b*Log[c*(d + e*x)^n]))/(
4*g^(5/2)*(Sqrt[-f] - Sqrt[g]*x)) + (f*(a + b*Log[c*(d + e*x)^n]))/(4*g^(5/
2)*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt
[-f] + d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*L
og[Sqrt[-f] + Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f
]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d
*Sqrt[g])])/(4*g^(5/2)) - (3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/
(e*Sqrt[-f] - d*Sqrt[g]))])/(4*g^(5/2)) + (3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^4 (a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{g^2} + \frac{f^2(a+b\log(c(d+ex)^n))}{g^2(f+gx^2)^2} - \frac{2f(a+b\log(c(d+ex)^n))}{g^2(f+gx^2)}\right.$$

$$= \frac{\int (a+b\log(c(d+ex)^n))\,dx}{g^2} - \frac{(2f)\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{g^2} + \frac{f^2\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}\,dx}{g^2}$$

$$= \frac{ax}{g^2} + \frac{b\int \log(c(d+ex)^n)\,dx}{g^2} - \frac{(2f)\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}+\sqrt{g}x)}\right)}{g^2}$$

$$= \frac{ax}{g^2} + \frac{b\,\text{Subst}\left(\int \log(cx^n)\,dx, x, d+ex\right)}{eg^2} - \frac{\sqrt{-f}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{g^2} - \frac{\sqrt{-f}\int}{}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg^2} - \frac{f(a+b\log(c(d+ex)^n))}{4g^{5/2}(\sqrt{-f}-\sqrt{g}x)} + \frac{f(a+b\log(c}{4g^{5/2}(\sqrt{-f}}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} + \frac{b(d+ex)\log(c(d+ex)^n)}{eg^2} - \frac{f(a+b\log(c(d+ex)^n))}{4g^{5/2}(\sqrt{-f}-\sqrt{g}x)} + \frac{f(a+b\log(c}{4g^{5/2}(\sqrt{-f}}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} - \frac{befn\log(d+ex)}{4(e\sqrt{-f}-d\sqrt{g})g^{5/2}} + \frac{befn\log(d+ex)}{4(e\sqrt{-f}+d\sqrt{g})g^{5/2}} + \frac{b(d+ex)\log(c(d+ex}{eg^2}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} - \frac{befn\log(d+ex)}{4(e\sqrt{-f}-d\sqrt{g})g^{5/2}} + \frac{befn\log(d+ex)}{4(e\sqrt{-f}+d\sqrt{g})g^{5/2}} + \frac{b(d+ex)\log(c(d+ex}{eg^2}$$

$$= \frac{ax}{g^2} - \frac{bnx}{g^2} - \frac{befn\log(d+ex)}{4(e\sqrt{-f}-d\sqrt{g})g^{5/2}} + \frac{befn\log(d+ex)}{4(e\sqrt{-f}+d\sqrt{g})g^{5/2}} + \frac{b(d+ex)\log(c(d+ex}{eg^2}$$

Mathematica [A] time = 0.955826, size = 434, normalized size = 0.81

$$-3b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)+3b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)-\frac{f(a+b\log(c(d+ex)^n))}{\sqrt{-f}-\sqrt{g}x}+\frac{f(a+b\log(c(d+ex)^n))}{\sqrt{-f}+\sqrt{g}x}+3\sqrt{-f}\log$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (4*a*Sqrt[g]*x - 4*b*Sqrt[g]*n*x + (4*b*Sqrt[g]*(d + e*x)*Log[c*(d + e*x)^n
])/e - (f*(a + b*Log[c*(d + e*x)^n]))/(Sqrt[-f] - Sqrt[g]*x) + (f*(a + b*Lo
g[c*(d + e*x)^n]))/(Sqrt[-f] + Sqrt[g]*x) + (b*e*f*n*(Log[d + e*x] - Log[Sq
rt[-f] - Sqrt[g]*x]))/(e*Sqrt[-f] + d*Sqrt[g]) + 3*Sqrt[-f]*(a + b*Log[c*(d
 + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])] - (b*e
*f*n*(Log[d + e*x] - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*Sqrt[-f] - d*Sqrt[g]) -
 3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sq
rt[-f] - d*Sqrt[g])] - 3*b*Sqrt[-f]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*S
qrt[-f] - d*Sqrt[g]))] + 3*b*Sqrt[-f]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*S
qrt[-f] + d*Sqrt[g])])/(4*g^(5/2))
```

Maple [C] time = 0.549, size = 2021, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x)
```

```
[Out] a*x/g^2-b*n*x/g^2-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*x+3/2*b/g^2*f/(f*g)^
(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-b*n/g^2*f*l
n(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g
))-3/2*b/g^2*f/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln
((e*x+d)^n)+b*ln(c)/g^2*x+3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f/(f*g)^(1/2
)*arctan(x*g/(f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g^2*f*x/(g*x^2+f
)+1/2*a/g^2*f*x/(g*x^2+f)-3/2*a/g^2*f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-b
/e*n/g^2*d-1/4*b*e*n/g^2*f/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2
*g+f*e^2)-1/2*b*e^2/g^2*f/(e^2*g*x^2+e^2*f)*x*n*ln(e*x+d)-1/2*b*e^2*n/g^2*f
^2/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))+
1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*x+b/e/g^2*d*ln((e*x+d)^n)+b*
ln((e*x+d)^n)/g^2*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)/g^2*x+1/2*b*e^2/g^2*f/(e^2*g*x^2+e^2*f)*x*ln((e*x+d)^n)-3/4*b*n/g^2*f/(
-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+3/4*
b*n/g^2*f/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)
-d*g))+1/2*b*ln(c)/g^2*f*x/(g*x^2+f)-3/2*b*ln(c)/g^2*f/(f*g)^(1/2)*arctan(x
*g/(f*g)^(1/2))+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g^2*x+b*
n/g^2*f*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^
(1/2)-d*g))-3/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g^2*f/(f*g)^(1/2)*ar
ctan(x*g/(f*g)^(1/2))-1/4*b*e^4*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+
e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))
*x^2+1/4*b*e^4*n/g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/
2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*x^2+1/4*b*e^2*n/
g*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(
1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2-1/4*b*e^2*n/g*f^2*ln(e*x+d)/(
d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*
g)/(e*(-f*g)^(1/2)-d*g))*d^2+1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x
```

```
^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*
g))*d^2*x^2-1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^
(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2*x^2+1/2*b
*e^4*n/g^2*f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x+1/2*b*e^3*n/g^2*
f^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d-3/4*I*b*Pi*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2/g^2*f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/2*b*e^2
*n/g*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d^2*x+1/4*I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2/g^2*f*x/(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2/g^2*f*x/(g*x^2+f)+1/2*b*e^3*n/g*f*ln(e*x+d)/(d^2*g+e^2*f)/
(e^2*g*x^2+e^2*f)*d*x^2-1/4*b*e^4*n/g^2*f^3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*
x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d
*g))+1/4*b*e^4*n/g^2*f^3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(
1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+3/4*I*b*Pi*csg
n(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*f/(f*g)^(1/2)*arctan(x*g/(
f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/g^2*
f*x/(g*x^2+f)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^4\log\left((ex+d)^n c\right)+ax^4}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^4*log((e*x + d)^n*c) + a*x^4)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)x^4}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^4/(g*x^2 + f)^2, x)
```

3.272 $\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=491

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4\sqrt{-f}g^{3/2}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4\sqrt{-f}g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}x\right)}+\frac{\log\left(\frac{e(\sqrt{}}{d\sqrt{}}\right.}{}$$

```
[Out] (b*e*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*e*n*Log[d +
e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (a + b*Log[c*(d + e*x)^n])/(4*
g^(3/2)*(Sqrt[-f] - Sqrt[g]*x)) - (a + b*Log[c*(d + e*x)^n])/(4*g^(3/2)*(Sq
rt[-f] + Sqrt[g]*x)) + (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt[-f] + d
*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*Log[Sqrt[-f]
+ Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]
*g^(3/2)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(4*Sqrt[-f]*g^(3/2)) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
```

Rubi [A] time = 0.759976, antiderivative size = 491, normalized size of antiderivative = 1., number of steps used = 28, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.37, Rules used = {288, 205, 2416, 2409, 2395, 36, 31, 2394, 2393, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4\sqrt{-f}g^{3/2}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4\sqrt{-f}g^{3/2}}+\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{a+b\log\left(c(d+ex)^n\right)}{4g^{3/2}\left(\sqrt{-f}+\sqrt{g}x\right)}+\frac{\log\left(\frac{e(\sqrt{}}{d\sqrt{}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] (b*e*n*Log[d + e*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*e*n*Log[d +
e*x])/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (a + b*Log[c*(d + e*x)^n])/(4*
g^(3/2)*(Sqrt[-f] - Sqrt[g]*x)) - (a + b*Log[c*(d + e*x)^n])/(4*g^(3/2)*(Sq
rt[-f] + Sqrt[g]*x)) + (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*(e*Sqrt[-f] + d
*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*Log[Sqrt[-f]
+ Sqrt[g]*x])/(4*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]
*g^(3/2)) - (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/(4*Sqrt[-f]*g^(3/2)) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2(a+b\log(c(d+ex)^n))}{(f+gx^2)^2}dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))}{g(f+gx^2)^2} + \frac{a+b\log(c(d+ex)^n)}{g(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}dx}{g} - \frac{f\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}dx}{g}$$

$$= \frac{\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f(\sqrt{-f}+\sqrt{g}x)}\right)dx}{g} - \frac{f\int \left(-\frac{g(a+b\log(c(d+ex)^n))}{4f(\sqrt{-f}\sqrt{g}-gx)^2} - \frac{g(a+b\log}{4f(\sqrt{}}\right.}{}$$

$$= \frac{1}{4}\int \frac{a+b\log(c(d+ex)^n)}{(\sqrt{-f}\sqrt{g}-gx)^2}dx + \frac{1}{4}\int \frac{a+b\log(c(d+ex)^n)}{(\sqrt{-f}\sqrt{g}+gx)^2}dx + \frac{1}{2}\int \frac{a+b\log(c(d}{-fg-g}$$

$$= \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}-\sqrt{g}x)} - \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}+\sqrt{g}x)} + \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-}{e\sqrt{-f}+}\right.}{2\sqrt{-f}g^{3/2}}$$

$$= \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}-\sqrt{g}x)} - \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}+\sqrt{g}x)} + \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(\sqrt{-f}-}{e\sqrt{-f}+}\right.}{2\sqrt{-f}g^{3/2}}$$

$$= \frac{ben\log(d+ex)}{4(e\sqrt{-f}-d\sqrt{g})g^{3/2}} - \frac{ben\log(d+ex)}{4(e\sqrt{-f}+d\sqrt{g})g^{3/2}} + \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}-\sqrt{g}x)} - \frac{a+b\log(c}{4g^{3/2}(\sqrt{-}}$$

$$= \frac{ben\log(d+ex)}{4(e\sqrt{-f}-d\sqrt{g})g^{3/2}} - \frac{ben\log(d+ex)}{4(e\sqrt{-f}+d\sqrt{g})g^{3/2}} + \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}-\sqrt{g}x)} - \frac{a+b\log(c}{4g^{3/2}(\sqrt{-}}$$

$$= \frac{ben\log(d+ex)}{4(e\sqrt{-f}-d\sqrt{g})g^{3/2}} - \frac{ben\log(d+ex)}{4(e\sqrt{-f}+d\sqrt{g})g^{3/2}} + \frac{a+b\log(c(d+ex)^n)}{4g^{3/2}(\sqrt{-f}-\sqrt{g}x)} - \frac{a+b\log(c}{4g^{3/2}(\sqrt{-}}$$

Mathematica [A] time = 0.88159, size = 383, normalized size = 0.78

$$\frac{\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}} + \frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{\sqrt{-f}} + \frac{\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}} + \frac{f\log\left(\frac{e(\sqrt{-f}+\sqrt{g}x)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}} + \frac{a+b\log(}{\sqrt{-f}}}{4g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n]))/(f + g*x^2)^2,x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])/(Sqrt[-f] - Sqrt[g]*x) - (a + b*Log[c*(d + e*x)
^n])/(Sqrt[-f] + Sqrt[g]*x) - (b*e*n*(Log[d + e*x] - Log[Sqrt[-f] - Sqrt[g]
*x]))/(e*Sqrt[-f] + d*Sqrt[g]) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/Sqrt[-f] + (b*e*n*(Log[d + e*x]
 - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*Sqrt[-f] - d*Sqrt[g]) + (f*(a + b*Log[c*(
d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(-f)
^(3/2) + (b*f*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))]
)/(-f)^(3/2) + (b*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/Sqrt[-f])/(4*g^(3/2))
```

Maple [C] time = 0.619, size = 1781, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*e^2/(e^2*g*x^2+e^2*f)/g*x*n*ln(e*x+d)+1/4*b*e*n/g/(d^2*g+e^2*f)*d*ln(
g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g+f*e^2)-1/2*b*n/g*ln(e*x+d)/(-f*g)^(1/2)*ln(
(e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b/g/(f*g)^(1/2)*ar
ctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)+1/2*b*n/g*ln(e*x+d)
/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*a
/g*x/(g*x^2+f)+1/2*a/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/4*I*b*Pi*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/g*x/(g*x^2+f)+1/4*I*b*Pi*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*
ln(c)/g*x/(g*x^2+f)+1/2*b*ln(c)/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*b
*n/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g)
)-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/g*x/(g*x^2+f)-1/2*b*e^3*n*ln(e
*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*d*x^2-1/2*b*e^2*n*ln(e*x+d)/(d^2*g+e^
2*f)/(e^2*g*x^2+e^2*f)*d^2*x+1/2*b*e^2*n*f/g/(d^2*g+e^2*f)/(f*g)^(1/2)*arct
an(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))+1/2*b/g/(f*g)^(1/2)*arctan(1/2*(2
*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)+1/4*I*b*Pi*csgn(I*c*(e*x+d)^
n)^3/g*x/(g*x^2+f)-1/4*b*n/g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d
*g)/(e*(-f*g)^(1/2)-d*g))+1/4*b*e^2*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+
e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))
*d^2*x^2-1/4*b*e^2*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/
2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2*x^2-1/2*b*e^
2/(e^2*g*x^2+e^2*f)/g*x*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/g/(f
*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*cs
gn(I*c*(e*x+d)^n)/g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*e^4*n*f/g*ln(
e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x-1/2*b*e^3*n*f/g*ln(e*x+d)/(d^2*g+e
^2*f)/(e^2*g*x^2+e^2*f)*d+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)/g*x/(g*x^2+f)-1/4*b*e^4*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^
2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*x
^2+1/4*b*e^4*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln(
(e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*x^2+1/4*b*e^2*n*f*ln(e
*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*
x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2+1/4*b*e^4*n*f^2/g*ln(e*x+d)/(d^2*g+e^2*
f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*
g)^(1/2)-d*g))-1/4*b*e^2*n*f*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*
g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2-1/4*b*
e^4*n*f^2/g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-
f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx^2\log\left((ex+d)^nc\right)+ax^2}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*log((e*x + d)^n*c) + a*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)x^2}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2/(g*x^2 + f)^2, x)
```

3.273 $\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2} dx$

Optimal. Leaf size=503

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{\log\left(\frac{e(\sqrt{-f}-\sqrt{}}{d\sqrt{g}+e\sqrt{}}\right.}{}$$

```
[Out] (b*e*n*Log[d + e*x])/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) + (b*e*n*Log[d
+ e*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) - (a + b*Log[c*(d + e*x)^n
])/(4*f*Sqrt[g]*(Sqrt[-f] - Sqrt[g]*x)) + (a + b*Log[c*(d + e*x)^n])/(4*f*S
qrt[g]*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f*(e*
Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n
*Log[Sqrt[-f] + Sqrt[g]*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a
+ b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt
[g])])/(4*(-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sq
rt[-f] - d*Sqrt[g]))])/(4*(-f)^(3/2)*Sqrt[g]) - (b*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g])
```

Rubi [A] time = 0.393576, antiderivative size = 503, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2409, 2395, 36, 31, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{3/2}\sqrt{g}}-\frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}-\frac{\log\left(\frac{e(\sqrt{-f}-\sqrt{}}{d\sqrt{g}+e\sqrt{}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2)^2,x]
```


```
[Out] (b*e*n*Log[d + e*x])/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) + (b*e*n*Log[d
+ e*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) - (a + b*Log[c*(d + e*x)^n
])/(4*f*Sqrt[g]*(Sqrt[-f] - Sqrt[g]*x)) + (a + b*Log[c*(d + e*x)^n])/(4*f*S
qrt[g]*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f*(e*
Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n
*Log[Sqrt[-f] + Sqrt[g]*x])/(4*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a
+ b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt
[g])])/(4*(-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sq
rt[-f] - d*Sqrt[g]))])/(4*(-f)^(3/2)*Sqrt[g]) - (b*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g])
```


Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
```

```
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{(f+gx^2)^2}\,dx = \int \left(-\frac{g(a+b\log(c(d+ex)^n))}{4f\left(\sqrt{-f}\sqrt{g}-gx\right)^2} - \frac{g(a+b\log(c(d+ex)^n))}{4f\left(\sqrt{-f}\sqrt{g}+gx\right)^2} - \frac{g(a+b\log(c(d+ex)^n))}{2f\left(-fg-g^2x^2\right)}\right) dx$$

$$= -\frac{g\int \frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}dx}{4f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}dx}{4f} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{-fg-g^2x^2}dx}{2f}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{g\int\left(-\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2fg\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{\sqrt{-f}(a+b\log(c(\ldots}{2fg\left(\sqrt{-f}+\ldots\right.}\right.}{2f}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)} + \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}dx}{4(-f)^{3/2}} + \frac{\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\ldots}{4(-f)^{3/2}}$$

$$= \frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}} + \frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}} - \frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b\log(c(d\ldots}{4f\sqrt{g}\left(\sqrt{-f}+\ldots\right.}$$

$$= \frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}} + \frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}} - \frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b\log(c(d\ldots}{4f\sqrt{g}\left(\sqrt{-f}+\ldots\right.}$$

$$= \frac{ben\log(d+ex)}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\sqrt{g}} + \frac{ben\log(d+ex)}{4\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}} - \frac{a+b\log(c(d+ex)^n)}{4f\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{a+b\log(c(d\ldots}{4f\sqrt{g}\left(\sqrt{-f}+\ldots\right.}$$

Mathematica [A] time = 1.39975, size = 407, normalized size = 0.81

$$\frac{1}{4}\left(\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{3/2}\sqrt{g}} + \frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{(-f)^{5/2}\sqrt{g}} + \frac{f\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{5/2}\sqrt{g}} + \frac{\log\left(\frac{e\left(\sqrt{-f}+\ldots\right)}{e\sqrt{-f}-\ldots}\right.\ldots}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(f + g*x^2)^2,x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])/(f*(Sqrt[-f]*Sqrt[g] + g*x)) + (a + b*Log[c*(d
+ e*x)^n])/((-f)^(3/2)*Sqrt[g] + f*g*x) + (b*e*n*(Log[d + e*x] - Log[Sqrt[-
f] - Sqrt[g]*x]))/(e*Sqrt[-f]*f*Sqrt[g] + d*f*g) + (f*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/((-f)^(5/2)
*Sqrt[g]) + (b*e*n*(Log[d + e*x] - Log[Sqrt[-f] + Sqrt[g]*x]))/(e*(-f)^(3/2
)*Sqrt[g] + d*f*g) + ((a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]
*x))/(e*Sqrt[-f] - d*Sqrt[g])])/((-f)^(3/2)*Sqrt[g]) + (b*n*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/((-f)^(3/2)*Sqrt[g]) + (b*f*n
*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/((-f)^(5/2)*Sqrt
[g]))/4
```

Maple [C] time = 0.61, size = 1666, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^2,x)
```

```
[Out] 1/2*b*e^2/f/(e^2*g*x^2+e^2*f)*x*ln((e*x+d)^n)+1/4*I*b*Pi*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2*x/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x/f/(g*x^2+f)+
1/2*b/f/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d
)^n)+1/4*b*n/f/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^
(1/2)+d*g))-1/4*b*n/f/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*
(-f*g)^(1/2)-d*g))+1/2*b*ln(c)*x/f/(g*x^2+f)+1/2*b*ln(c)/f/(f*g)^(1/2)*arct
an(x*g/(f*g)^(1/2))-1/2*b/f/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f
*g)^(1/2))*n*ln(e*x+d)-1/2*b*e^2*n/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(2*
g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))+1/2*a*x/f/(g*x^2+f)+1/2*a/f/(f*g)^(1/2)*arc
tan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f/(f*g)^(1/
2)*arctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2/f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*x/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f/(f*g)^(1/
2)*arctan(x*g/(f*g)^(1/2))+1/2*b*e^3*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e
^2*f)*d+1/2*b*e^4*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)*x-1/4*b*e*n/f
/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g+f*e^2)-1/2*b*e^2/f/(e^2
*g*x^2+e^2*f)*x*n*ln(e*x+d)+1/4*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*x^
2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g
))*d^2*g^2*x^2-1/4*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*
g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2*g^2*x^
2+1/4*b*e^4*n*ln(e*x+d)*f/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((
e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/4*b*e^4*n*ln(e*x+d)*f
/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-
d*g)/(e*(-f*g)^(1/2)-d*g))-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)*x/f/(g*x^2+f)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)/f/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*b*e^4*n*ln(e*x+d)/(d^2*g
+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e
*(-f*g)^(1/2)+d*g))*g*x^2+1/4*b*e^2*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^
2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*g
*d^2-1/4*b*e^4*n*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln(
(e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*g*x^2-1/4*b*e^2*n*ln(e
*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*
x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*g*d^2+1/2*b*e^3*n*ln(e*x+d)/f/(d^2*g+e^2*f)
/(e^2*g*x^2+e^2*f)*d*g*x^2+1/2*b*e^2*n*ln(e*x+d)/f/(d^2*g+e^2*f)/(e^2*g*x^2
+e^2*f)*d^2*g*x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left((ex+d)^n c \right) + a}{\left(gx^2 + f \right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(g*x^2 + f)^2, x)
```

3.274 $\int \frac{a+b\log(c(d+ex)^n)}{x^2\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=560

$$\frac{3b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{5/2}}-\frac{3b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{5/2}}+\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{\sqrt{g}\left(a+b\log\left(c(d+\right.\right.}{4f^2\left(\sqrt{-f}+\sqrt{g}\right.}$$

```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) - (b*e*Sqrt[g]*n*Log[
d + e*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (b*e*Sqrt[g]*n*Log[d + e*x])/(
4*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) + (S
qrt[g]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] - Sqrt[g]*x)) - (Sqrt[g
]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*Sqrt[g]
*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*Log[Sqrt[-f] + Sqrt[g]*x])/(4*f*
(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (3*b*
Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(4*(
-f)^(5/2)) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2))
```

Rubi [A] time = 0.819267, antiderivative size = 560, normalized size of antiderivative = 1., number of steps used = 32, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {290, 325, 205, 2416, 2395, 36, 29, 31, 2409, 2394, 2393, 2391}

$$\frac{3b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{4(-f)^{5/2}}-\frac{3b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{4(-f)^{5/2}}+\frac{\sqrt{g}\left(a+b\log\left(c(d+ex)^n\right)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}x\right)}-\frac{\sqrt{g}\left(a+b\log\left(c(d+\right.\right.}{4f^2\left(\sqrt{-f}+\sqrt{g}\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)^2),x]
```


```
[Out] (b*e*n*Log[x])/(d*f^2) - (b*e*n*Log[d + e*x])/(d*f^2) - (b*e*Sqrt[g]*n*Log[
d + e*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (b*e*Sqrt[g]*n*Log[d + e*x])/(
4*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) - (a + b*Log[c*(d + e*x)^n])/(f^2*x) + (S
qrt[g]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] - Sqrt[g]*x)) - (Sqrt[g
]*(a + b*Log[c*(d + e*x)^n]))/(4*f^2*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*Sqrt[g]
*n*Log[Sqrt[-f] - Sqrt[g]*x])/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*Log[Sqrt[-f] + Sqrt[g]*x])/(4*f*
(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (3*b*
Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(4*(
-f)^(5/2)) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(4*(-f)^(5/2))
```


Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
```

]

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{x^2\left(f+gx^2\right)^2}\,dx = \int \left(\frac{a+b\log(c(d+ex)^n)}{f^2x^2} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f\left(f+gx^2\right)^2} - \frac{g\left(a+b\log(c(d+ex)^n)\right)}{f^2\left(f+gx^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\log(c(d+ex)^n)}{x^2}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{f+gx^2}\,dx}{f^2} - \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\left(f+gx^2\right)^2}\,dx}{f}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{f^2x} - \frac{g\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx}{f^2} - \frac{g\int \left(-\frac{g(}{4}\right.}{}$$

$$= -\frac{a+b\log(c(d+ex)^n)}{f^2x} + \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}-\sqrt{g}x}\,dx}{2(-f)^{5/2}} + \frac{g\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{-f}+\sqrt{g}x}\,dx}{2(-f)^{5/2}} + \frac{g^2\int \frac{a+b\log(c(}{(\sqrt{-f}\sqrt{g}}}{4f^2}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} - \frac{a+b\log(c(d+ex)^n)}{f^2x} + \frac{\sqrt{g}\left(a+b\log(c(d+ex)^n)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}x\right)} - \sqrt{}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} - \frac{a+b\log(c(d+ex)^n)}{f^2x} + \frac{\sqrt{g}\left(a+b\log(c(d+ex)^n)\right)}{4f^2\left(\sqrt{-f}-\sqrt{g}x\right)} - \sqrt{}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)} - \frac{a+b\log(c}{f^2}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)} - \frac{a+b\log(c}{f^2}$$

$$= \frac{ben\log(x)}{df^2} - \frac{ben\log(d+ex)}{df^2} + \frac{be\sqrt{g}n\log(d+ex)}{4f^2\left(e\sqrt{-f}-d\sqrt{g}\right)} - \frac{be\sqrt{g}n\log(d+ex)}{4f^2\left(e\sqrt{-f}+d\sqrt{g}\right)} - \frac{a+b\log(c}{f^2}$$

Mathematica [A] time = 0.954445, size = 476, normalized size = 0.85

$$\frac{1}{4}\left(\frac{3b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{(-f)^{5/2}} - \frac{3b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{(-f)^{5/2}} + \frac{\sqrt{g}\left(a+b\log(c(d+ex)^n)\right)}{f^2\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{\sqrt{g}\left(a+b\log(c(\right.}{f^2\left(\sqrt{-f}+\right.}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(x^2*(f + g*x^2)^2),x]
```

```
[Out] ((4*b*e*n*(Log[x] - Log[d + e*x]))/(d*f^2) - (4*(a + b*Log[c*(d + e*x)^n]))
/(f^2*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n]))/(f^2*(Sqrt[-f] - Sqrt[g]*x)
) - (Sqrt[g]*(a + b*Log[c*(d + e*x)^n]))/(f^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*
e*Sqrt[g]*n*(Log[d + e*x] - Log[Sqrt[-f] - Sqrt[g]*x]))/(f^2*(e*Sqrt[-f] +
d*Sqrt[g])) - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt
[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) + (b*e*Sqrt[g]*n*(Log[d + e*x
] - Log[Sqrt[-f] + Sqrt[g]*x]))/(f^2*(e*Sqrt[-f] - d*Sqrt[g])) + (3*Sqrt[g]
*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*
Sqrt[g])])/(-f)^(5/2) + (3*b*Sqrt[g]*n*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) - (3*b*Sqrt[g]*n*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2))/4
```

Maple [C] time = 0.654, size = 2032, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x)
```

```
[Out] -b*e*n*ln(e*x+d)/d/f^2-3/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g/(f*
g)^(1/2)*arctan(x*g/(f*g)^(1/2))+3/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g/(f*
g)^(1/2)*arctan(x*g/(f*g)^(1/2))+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/f^2*g*x/(
g*x^2+f)+1/4*b*e*n/f^2*g/(d^2*g+e^2*f)*d*ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g
+f*e^2)+1/2*b*e^2*n/f*g/(d^2*g+e^2*f)/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2
*d*g)/e/(f*g)^(1/2))+1/2*b/f^2*g/(e^2*g*x^2+e^2*f)*x*e^2*n*ln(e*x+d)-3/4*b*
n/f^2*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d
*g))+3/4*b*n/f^2*g/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f
*g)^(1/2)-d*g))-a/f^2/x+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)/f^2/x-1/2*a/f^2*g*x/(g*x^2+f)-3/2*a/f^2*g/(f*g)^(1/2)*arctan(x*g/(f
*g)^(1/2))-b*ln((e*x+d)^n)/f^2/x-3/2*b/f^2*g/(f*g)^(1/2)*arctan(1/2*(2*g*(e
*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^n)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/
f^2/x+b*e*n/f^2/d*ln(e*x)-b*ln(c)/f^2/x-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2/f^2/x-1/2*b*ln(c)/f^2*g*x/(g*x^2+f)-3/2*b*ln(c)/f^2*g/(f*g)^(1/2)*a
rctan(x*g/(f*g)^(1/2))+1/2*b*n/f^2*g*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1
/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*n/f^2*g*ln(e*x+d)/(-f*g)^(1/
2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+3/2*b/f^2*g/(f*g
)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*n*ln(e*x+d)-1/2*I*b*P
i*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/f^2/x+1/4*I*b*Pi*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g*x/(g*x^2+f)-1/4*b*e^4*n/f*g^2*ln(e*x+
d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d
)+d*g)/(e*(-f*g)^(1/2)+d*g))*x^2+1/4*b*e^2*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/
(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^
(1/2)-d*g))*d^2+1/4*b*e^4*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)
/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*x^2-1
/4*b*e^2*n/f*g^2*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln(
(e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2-1/2*b/f^2*g/(e^2*g
*x^2+e^2*f)*x*e^2*ln((e*x+d)^n)-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2/f^2*g*x/(g*x^2+f)-3/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2/f^2*g/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))-1/2*b*n/f^2*g^2*ln(e*x+d)/(d^2*
g+e^2*f)/(e^2*g*x^2+e^2*f)*d*x^2*e^3-1/2*b*n/f^2*g^2*ln(e*x+d)/(d^2*g+e^2*f
)/(e^2*g*x^2+e^2*f)*d^2*x*e^2-1/2*b*e^3*n/f*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*
g*x^2+e^2*f)*d-1/4*b*e^4*n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*
g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))+1/4*b*e^4*
n*g*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/
```

```
2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))-1/2*b*e^4*n/f*g*ln(e*x+d)/(d^2*g+e^
2*f)/(e^2*g*x^2+e^2*f)*x-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/f^2*g*x
/(g*x^2+f)+1/4*b*e^2*n/f^2*g^3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-
f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d^2*x^2-
1/4*b*e^2*n/f^2*g^3*ln(e*x+d)/(d^2*g+e^2*f)/(e^2*g*x^2+e^2*f)/(-f*g)^(1/2)*
ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))*d^2*x^2+3/4*I*b*Pi*
csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/f^2*g/(f*g)^(1/2)*arctan(x*
g/(f*g)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)+a}{g^2x^6+2\,fgx^4+f^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(g^2*x^6 + 2*f*g*x^4 + f^2*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/x**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex+d)^n c\right)+a}{\left(gx^2+f\right)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/x^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((g*x^2 + f)^2*x^2), x)
```

3.275 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2+gx^2}}\,dx$

Optimal. Leaf size=326

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{d^2g+2e^2}}\right)}{\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}\right)}{\sqrt{g}}+\frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}}-\frac{bn\sinh^{-1}}{}$$

```
[Out] (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]^2)/(2*Sqrt[g]) - (b*n*ArcSinh[(Sqrt[g]*x)
/Sqrt[2]]*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - S
qrt[2*e^2 + d^2*g])])/Sqrt[g] - (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*Log[1 + (
Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g])
])/Sqrt[g] + (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(a + b*Log[c*(d + e*x)^n]))/Sqrt
[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[
g] - Sqrt[2*e^2 + d^2*g]))])/Sqrt[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSi
nh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/Sqrt[g]
```

Rubi [A] time = 0.420563, antiderivative size = 326, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {215, 2404, 12, 5799, 5561, 2190, 2279, 2391}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{d^2g+2e^2}}\right)}{\sqrt{g}}-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}\right)}{\sqrt{g}}+\frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}}-\frac{bn\sinh^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[2 + g*x^2],x]
```


```
[Out] (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]^2)/(2*Sqrt[g]) - (b*n*ArcSinh[(Sqrt[g]*x)
/Sqrt[2]]*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - S
qrt[2*e^2 + d^2*g])])/Sqrt[g] - (b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*Log[1 + (
Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g])
])/Sqrt[g] + (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(a + b*Log[c*(d + e*x)^n]))/Sqrt
[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[
g] - Sqrt[2*e^2 + d^2*g]))])/Sqrt[g] - (b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSi
nh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/Sqrt[g]
```


Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2+gx^2}}\,dx = \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}} - (ben)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}{\sqrt{g}(d+ex)}\,dx$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}} - \frac{(ben)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}{d+ex}\,dx}{\sqrt{g}}$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}} - \frac{(ben)\,\text{Subst}\left(\int \frac{x\cosh(x)}{\frac{d\sqrt{g}}{\sqrt{2}}+e\sinh(x)}\,dx, x, \sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\right)}{\sqrt{g}}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)^2}{2\sqrt{g}} + \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{g}} - \frac{(ben)\,\text{Subst}\left(\int \frac{e^x x}{ee^x+\frac{d\sqrt{g}}{\sqrt{2}}-\frac{\sqrt{2e^2+d^2g}}{\sqrt{2}}}\right.}{\sqrt{g}}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{}}{d}\right.}{\sqrt{g}}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{}}{d}\right.}{\sqrt{g}}$$

$$= \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)^2}{2\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{d\sqrt{g}-\sqrt{2e^2+d^2g}}\right)}{\sqrt{g}} - \frac{bn\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{}}{d}\right.}{\sqrt{g}}$$

Mathematica [A] time = 0.231515, size = 275, normalized size = 0.84

$$\frac{-2bn\text{PolyLog}\left(2, \frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}-d\sqrt{g}}\right) - 2bn\text{PolyLog}\left(2, -\frac{\sqrt{2}ee^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)}}{\sqrt{d^2g+2e^2}+d\sqrt{g}}\right) + \sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{2}}\right)\left(2a+2b\log(c(d+ex)^n)-2bn\log\right.}{2\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[2 + g*x^2],x]
```

```
[Out] (ArcSinh[(Sqrt[g]*x)/Sqrt[2]]*(2*a + b*n*ArcSinh[(Sqrt[g]*x)/Sqrt[2]] - 2*b
*n*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d*Sqrt[g] - Sqrt[2*e
^2 + d^2*g])] - 2*b*n*Log[1 + (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d
*Sqrt[g] + Sqrt[2*e^2 + d^2*g])] + 2*b*Log[c*(d + e*x)^n]) - 2*b*n*PolyLog[
2, (Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(-(d*Sqrt[g]) + Sqrt[2*e^2 +
d^2*g])] - 2*b*n*PolyLog[2, -((Sqrt[2]*e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[2]])/(d
*Sqrt[g] + Sqrt[2*e^2 + d^2*g]))])/(2*Sqrt[g])
```

Maple [F] time = 0.852, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)\frac{1}{\sqrt{g\,x^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx^{2}+2}\,b\log\left(\left(ex+d\right)^{n}c\right)+\sqrt{gx^{2}+2}\,a}{gx^{2}+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x^2 + 2)*b*log((e*x + d)^n*c) + sqrt(g*x^2 + 2)*a)/(g*x^2
+ 2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a+b\log\left(c\left(d+ex\right)^{n}\right)}{\sqrt{gx^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/sqrt(g*x**2 + 2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(ex+d\right)^{n}c\right)+a}{\sqrt{gx^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/sqrt(g*x^2 + 2), x)
```

3.276 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f+gx^2}}\,dx$

Optimal. Leaf size=506

$$-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\text{PolyLog}\left(2,-\frac{e\sqrt{f}e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}}{d\sqrt{g}-\sqrt{d^2g+e^2f}}\right)}{\sqrt{g}\sqrt{f+gx^2}}-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\text{PolyLog}\left(2,-\frac{e\sqrt{f}e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}}{\sqrt{d^2g+e^2f}+d\sqrt{g}}\right)}{\sqrt{g}\sqrt{f+gx^2}}+\frac{\sqrt{f}\sqrt{\frac{gx^2}{f}+1}\sinh^{-1}\cdots}{\cdots}$$

```
[Out] (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]^2)/(2*Sqrt[g]
*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sq
rt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt
[e^2*f + d^2*g])])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2
)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]
*Sqrt[f])/(d*Sqrt[g] + Sqrt[e^2*f + d^2*g])])/(Sqrt[g]*Sqrt[f + g*x^2]) + (
Sqrt[f]*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*(a + b*Log[c*(d +
e*x)^n]))/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*Poly
Log[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt[e^2*f
 + d^2*g]))])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*
PolyLog[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] + Sqrt[e
^2*f + d^2*g]))])/(Sqrt[g]*Sqrt[f + g*x^2])
```

Rubi [A] time = 0.556819, antiderivative size = 506, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2406, 215, 2404, 12, 5799, 5561, 2190, 2279, 2391}

$$-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\text{PolyLog}\left(2,-\frac{e\sqrt{f}e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}}{d\sqrt{g}-\sqrt{d^2g+e^2f}}\right)}{\sqrt{g}\sqrt{f+gx^2}}-\frac{b\sqrt{f}n\sqrt{\frac{gx^2}{f}+1}\text{PolyLog}\left(2,-\frac{e\sqrt{f}e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}}{\sqrt{d^2g+e^2f}+d\sqrt{g}}\right)}{\sqrt{g}\sqrt{f+gx^2}}+\frac{\sqrt{f}\sqrt{\frac{gx^2}{f}+1}\sinh^{-1}\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2],x]
```


```
[Out] (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]^2)/(2*Sqrt[g]
*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sq
rt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt
[e^2*f + d^2*g])])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2
)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Log[1 + (e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]
*Sqrt[f])/(d*Sqrt[g] + Sqrt[e^2*f + d^2*g])])/(Sqrt[g]*Sqrt[f + g*x^2]) + (
Sqrt[f]*Sqrt[1 + (g*x^2)/f]*ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*(a + b*Log[c*(d +
e*x)^n]))/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*Poly
Log[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] - Sqrt[e^2*f
 + d^2*g]))])/(Sqrt[g]*Sqrt[f + g*x^2]) - (b*Sqrt[f]*n*Sqrt[1 + (g*x^2)/f]*
PolyLog[2, -((e*E^ArcSinh[(Sqrt[g]*x)/Sqrt[f]]*Sqrt[f])/(d*Sqrt[g] + Sqrt[e
^2*f + d^2*g]))])/(Sqrt[g]*Sqrt[f + g*x^2])
```


Rule 2406

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> Dist[Sqrt[1 + (g*x^2)/f]/Sqrt[f + g*x^2], Int[(a + b*
Log[c*(d + e*x)^n])/Sqrt[1 + (g*x^2)/f], x], x] /; FreeQ[{a, b, c, d, e, f,
 g, n}, x] &&  !GtQ[f, 0]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{f+gx^2}}\,dx = \frac{\sqrt{1+\frac{gx^2}{f}}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{1+\frac{gx^2}{f}}}\,dx}{\sqrt{f+gx^2}}$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(ben\sqrt{1+\frac{gx^2}{f}}\right)\int \frac{\sqrt{f}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{\sqrt{g}(d+ex)}\,dx}{\sqrt{f+gx^2}} \cdots$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(be\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\right)\int \frac{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}{d+ex}\,dx}{\sqrt{g}\sqrt{f+gx^2}} \cdots$$

$$= \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \frac{\left(be\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\right)\text{Subst}\left(\int \cdots\right)}{\sqrt{g}\sqrt{f+g\cdots}} \cdots$$

$$= \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} + \frac{\sqrt{f}\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{\sqrt{g}\sqrt{f+gx^2}} - \cdots$$

$$= \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\log\left(1+\frac{e e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2f+d^2g}}\right)}{\sqrt{g}\sqrt{f+gx^2}} \cdots$$

$$= \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\log\left(1+\frac{e e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2f+d^2g}}\right)}{\sqrt{g}\sqrt{f+gx^2}} \cdots$$

$$= \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)^2}{2\sqrt{g}\sqrt{f+gx^2}} - \frac{b\sqrt{f}n\sqrt{1+\frac{gx^2}{f}}\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)\log\left(1+\frac{e e^{\sinh^{-1}\left(\frac{\sqrt{g}x}{\sqrt{f}}\right)}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2f+d^2g}}\right)}{\sqrt{g}\sqrt{f+gx^2}} \cdots$$

Mathematica [F] time = 3.60508, size = 0, normalized size = 0.

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\sqrt{f+gx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2],x]
```

```
[Out] Integrate[(a + b*Log[c*(d + e*x)^n])/Sqrt[f + g*x^2], x]
```

Maple [F] time = 0.822, size = 0, normalized size = 0.

$$\int (a+b\ln(c(ex+d)^{n}))\frac{1}{\sqrt{gx^{2}+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{gx^{2}+f}\,b\log\left((ex+d)^{n}c\right)+\sqrt{gx^{2}+f}\,a}{gx^{2}+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((sqrt(g*x^2 + f)*b*log((e*x + d)^n*c) + sqrt(g*x^2 + f)*a)/(g*x^2
+ f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c(d+ex)^{n}\right)}{\sqrt{f+gx^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(g*x**2+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/sqrt(f + g*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left((ex+d)^{n}c\right)+a}{\sqrt{gx^{2}+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(g*x^2+f)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/sqrt(g*x^2 + f), x)
```

3.277 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2-gx}\sqrt{2+gx}}\,dx$

Optimal. Leaf size=278

$$\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{-\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\cdots}{\cdots}$$

```
[Out] ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (2*e*E^(I*Ar
cSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g - (b*n*ArcSin[(g*x)/2]*
Log[1 + (2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g + (
ArcSin[(g*x)/2]*(a + b*Log[c*(d + e*x)^n]))/g + (I*b*n*PolyLog[2, (-2*e*E^(
I*ArcSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2,
 (-2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g
```

Rubi [A] time = 0.474454, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {216, 2405, 4741, 4521, 2190, 2279, 2391}

$$\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{-\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{ibn\text{PolyLog}\left(2,-\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{\sqrt{4e^2-d^2g^2}+idg}\right)}{g}+\frac{\sin^{-1}\left(\frac{gx}{2}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g}-\frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(Sqrt[2 - g*x]*Sqrt[2 + g*x]),x]
```

```
[Out] ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (2*e*E^(I*Ar
cSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g - (b*n*ArcSin[(g*x)/2]*
Log[1 + (2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g + (
ArcSin[(g*x)/2]*(a + b*Log[c*(d + e*x)^n]))/g + (I*b*n*PolyLog[2, (-2*e*E^(
I*ArcSin[(g*x)/2]))/(I*d*g - Sqrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2,
 (-2*e*E^(I*ArcSin[(g*x)/2]))/(I*d*g + Sqrt[4*e^2 - d^2*g^2])])/g
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2405

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> With[{u = IntHide[1/Sqrt[
f1*f2 + g1*g2*x^2], x]}, Simp[u*(a + b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n
, Int[SimplifyIntegrand[u/(d + e*x), x], x], x]] /; FreeQ[{a, b, c, d, e, f
1, g1, f2, g2, n}, x] && EqQ[f2*g1 + f1*g2, 0] && GtQ[f1, 0] && GtQ[f2, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{2-gx}\sqrt{2+gx}}\,dx = \frac{\sin^{-1}\left(\frac{gx}{2}\right)(a+b\log(c(d+ex)^n))}{g} - (ben)\int \frac{\sin^{-1}\left(\frac{gx}{2}\right)}{dg+egx}\,dx$$

$$= \frac{\sin^{-1}\left(\frac{gx}{2}\right)(a+b\log(c(d+ex)^n))}{g} - (ben)\,\text{Subst}\left(\int \frac{x\cos(x)}{\frac{dg^2}{2}+eg\sin(x)}\,dx, x, \sin^{-1}\left(\frac{gx}{2}\right)\right)$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} + \frac{\sin^{-1}\left(\frac{gx}{2}\right)(a+b\log(c(d+ex)^n))}{g} - (iben)\,\text{Subst}\left(\int \frac{e^{ix}}{ee^{ix}g+\frac{1}{2}idg^2 -}\right.$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}}}{idg+\sqrt{4e^2-}}\right.}{g}$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}}}{idg+\sqrt{4e^2-}}\right.}{g}$$

$$= \frac{ibn\sin^{-1}\left(\frac{gx}{2}\right)^2}{2g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{idg-\sqrt{4e^2-d^2g^2}}\right)}{g} - \frac{bn\sin^{-1}\left(\frac{gx}{2}\right)\log\left(1+\frac{2ee^{i\sin^{-1}}}{idg+\sqrt{4e^2-}}\right.}{g}$$

Mathematica [A] time = 0.0283868, size = 307, normalized size = 1.1

$$\frac{ibn\text{PolyLog}\left(2,\frac{2iee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{dg-i\sqrt{4e^2-d^2g^2}}\right)}{g} + \frac{ibn\text{PolyLog}\left(2,\frac{2iee^{i\sin^{-1}\left(\frac{gx}{2}\right)}}{dg+i\sqrt{4e^2-d^2g^2}}\right)}{g} + \frac{a\sin^{-1}\left(\frac{gx}{2}\right)}{g} + \frac{b\sin^{-1}\left(\frac{gx}{2}\right)\log(c(d+ex)^n)}{g} - \frac{bn\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(Sqrt[2 - g*x]*Sqrt[2 + g*x]),x]
```

```
[Out] (a*ArcSin[(g*x)/2])/g + ((I/2)*b*n*ArcSin[(g*x)/2]^2)/g - (b*n*ArcSin[(g*x)
/2]*Log[1 + (e*E^(I*ArcSin[(g*x)/2])*g)/((I/2)*d*g^2 - (g*Sqrt[4*e^2 - d^2*
g^2])/2)])/g - (b*n*ArcSin[(g*x)/2]*Log[1 + (e*E^(I*ArcSin[(g*x)/2])*g)/((I
/2)*d*g^2 + (g*Sqrt[4*e^2 - d^2*g^2])/2)])/g + (b*ArcSin[(g*x)/2]*Log[c*(d
+ e*x)^n])/g + (I*b*n*PolyLog[2, ((2*I)*e*E^(I*ArcSin[(g*x)/2]))/(d*g - I*S
qrt[4*e^2 - d^2*g^2])])/g + (I*b*n*PolyLog[2, ((2*I)*e*E^(I*ArcSin[(g*x)/2]
))/(d*g + I*Sqrt[4*e^2 - d^2*g^2])])/g
```

Maple [F] time = 1.102, size = 0, normalized size = 0.

$$\int (a+b\ln \left(c\,(ex+d)^{n}\right))\frac{1}{\sqrt{-gx+2}}\frac{1}{\sqrt{gx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log \left((ex+d)^{n}\right)+\log \left(c\right)}{\sqrt{gx+2}\sqrt{-gx+2}}\,dx+\frac{a\arcsin \left(\frac{g^{2}x}{2\sqrt{g^{2}}}\right)}{\sqrt{g^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(sqrt(g*x + 2)*sqrt(-g*x + 2)), x)
+ a*arcsin(1/2*g^2*x/sqrt(g^2))/sqrt(g^2)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\sqrt{gx+2}\sqrt{-gx+2}b\log \left((ex+d)^{n}c\right)+\sqrt{gx+2}\sqrt{-gx+2}a}{g^{2}x^{2}-4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(-(sqrt(g*x + 2)*sqrt(-g*x + 2)*b*log((e*x + d)^n*c) + sqrt(g*x + 2
)*sqrt(-g*x + 2)*a)/(g^2*x^2 - 4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\log\left(c(d + ex)^n\right)}{\sqrt{-gx + 2}\sqrt{gx + 2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(-g*x+2)**(1/2)/(g*x+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(sqrt(-g*x + 2)*sqrt(g*x + 2)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left((ex + d)^n c\right) + a}{\sqrt{gx + 2}\sqrt{-gx + 2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+2)^(1/2)/(g*x+2)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(sqrt(g*x + 2)*sqrt(-g*x + 2)), x)
```

3.278 $\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f-gx}\sqrt{f+gx}}\,dx$

Optimal. Leaf size=510

$$\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\sin^{-1}\left(\frac{gx}{f}\right)}}{-\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\sin^{-1}\left(\frac{gx}{f}\right)}}{\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)(a}{g\sqrt{f-gx}\sqrt{}}$$

```
[Out] ((I/2)*b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]^2)/(g*Sqrt[f - g*x]*Sq
rt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e*E^
(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g*x]
*Sqrt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e
*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g
*x]*Sqrt[f + g*x]) + (f*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*(a + b*Log[
c*(d + e*x)^n]))/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x
^2)/f^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d
^2*g^2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x^2)/f
^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^
2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x])
```

Rubi [A] time = 0.643674, antiderivative size = 510, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.265, Rules used = {2407, 216, 2404, 12, 4741, 4521, 2190, 2279, 2391}

$$\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\sin^{-1}\left(\frac{gx}{f}\right)}}{-\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\,\text{PolyLog}\left(2,-\frac{efe^{i\sin^{-1}\left(\frac{gx}{f}\right)}}{\sqrt{e^2f^2-d^2g^2}+idg}\right)}{g\sqrt{f-gx}\sqrt{f+gx}}+\frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)(a}{g\sqrt{f-gx}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/(Sqrt[f - g*x]*Sqrt[f + g*x]),x]
```

```
[Out] ((I/2)*b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]^2)/(g*Sqrt[f - g*x]*Sq
rt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e*E^
(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g*x]
*Sqrt[f + g*x]) - (b*f*n*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*Log[1 + (e
*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^2])])/(g*Sqrt[f - g
*x]*Sqrt[f + g*x]) + (f*Sqrt[1 - (g^2*x^2)/f^2]*ArcSin[(g*x)/f]*(a + b*Log[
c*(d + e*x)^n]))/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x
^2)/f^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g - Sqrt[e^2*f^2 - d
^2*g^2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x]) + (I*b*f*n*Sqrt[1 - (g^2*x^2)/f
^2]*PolyLog[2, -((e*E^(I*ArcSin[(g*x)/f])*f)/(I*d*g + Sqrt[e^2*f^2 - d^2*g^
2]))])/(g*Sqrt[f - g*x]*Sqrt[f + g*x])
```

Rule 2407

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> Dist[Sqrt[1 + (g1*g2*x^2)
/(f1*f2)]/(Sqrt[f1 + g1*x]*Sqrt[f2 + g2*x]), Int[(a + b*Log[c*(d + e*x)^n])
/Sqrt[1 + (g1*g2*x^2)/(f1*f2)], x], x] /; FreeQ[{a, b, c, d, e, f1, g1, f2,
 g2, n}, x] && EqQ[f2*g1 + f1*g2, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{f-gx}\sqrt{f+gx}}\,dx = \frac{\sqrt{1-\frac{g^2x^2}{f^2}}\int \frac{a+b\log(c(d+ex)^n)}{\sqrt{1-\frac{g^2x^2}{f^2}}}\,dx}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(ben\sqrt{1-\frac{g^2x^2}{f^2}}\right)\int \frac{f\sin^{-1}\left(\frac{gx}{f}\right)}{dg+egx}\,dx}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(befn\sqrt{1-\frac{g^2x^2}{f^2}}\right)\int \frac{\sin^{-1}\left(\frac{gx}{f}\right)}{dg+egx}\,dx}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(befn\sqrt{1-\frac{g^2x^2}{f^2}}\right)\text{Subst}\left(\int \frac{x\cos(x)}{\frac{dg^2}{f}+eg\sin(x)}\,dx\right.}{\sqrt{f-gx}\sqrt{f+gx}}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} + \frac{f\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)(a+b\log(c(d+ex)^n))}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{\left(ibefn\sqrt{1-\right.}{}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-}}{}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-}}{}$$

$$= \frac{ibfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)^2}{2g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-\frac{g^2x^2}{f^2}}\sin^{-1}\left(\frac{gx}{f}\right)\log\left(1+\frac{ee^{i\sin^{-1}\left(\frac{gx}{f}\right)}f}{idg-\sqrt{e^2f^2-d^2g^2}}\right)}{g\sqrt{f-gx}\sqrt{f+gx}} - \frac{bfn\sqrt{1-}}{}$$

Mathematica [B] time = 4.3266, size = 1077, normalized size = 2.11

$$\frac{\tan^{-1}\left(\frac{gx}{\sqrt{f-gx}\sqrt{f+gx}}\right)(a-bn\log(d+ex)+b\log(c(d+ex)^n))}{g} - \frac{ibn\sqrt{f-gx}\sqrt{\frac{f+gx}{f-gx}}\left(\log^2\left(i-\sqrt{\frac{f+gx}{f-gx}}\right)+2\log(d+ex)\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/(Sqrt[f - g*x]*Sqrt[f + g*x]),x]
```

```
[Out] (ArcTan[(g*x)/(Sqrt[f - g*x]*Sqrt[f + g*x])]*(a - b*n*Log[d + e*x] + b*Log[
c*(d + e*x)^n]))/g - ((I/2)*b*n*Sqrt[f - g*x]*Sqrt[(f + g*x)/(f - g*x)]*(2*
Log[d + e*x]*Log[I - Sqrt[(f + g*x)/(f - g*x)]] + Log[I - Sqrt[(f + g*x)/(f
 - g*x)]]^2 + 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]]*Log[(1 - I*Sqrt[(f + g*x
)/(f - g*x)])/2] - 2*Log[d + e*x]*Log[I + Sqrt[(f + g*x)/(f - g*x)]] - 2*Lo
g[(1 + I*Sqrt[(f + g*x)/(f - g*x)])/2]*Log[I + Sqrt[(f + g*x)/(f - g*x)]] -
```

```
 Log[I + Sqrt[(f + g*x)/(f - g*x)]]^2 - 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]
]*Log[(Sqrt[e*f - d*g] - Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e
*f - d*g] - I*Sqrt[e*f + d*g])] + 2*Log[I + Sqrt[(f + g*x)/(f - g*x)]]*Log[
(Sqrt[e*f - d*g] - Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d
*g] + I*Sqrt[e*f + d*g])] + 2*Log[I + Sqrt[(f + g*x)/(f - g*x)]]*Log[(Sqrt[
e*f - d*g] + Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d*g] -
I*Sqrt[e*f + d*g])] - 2*Log[I - Sqrt[(f + g*x)/(f - g*x)]]*Log[(Sqrt[e*f -
d*g] + Sqrt[e*f + d*g]*Sqrt[(f + g*x)/(f - g*x)])/(Sqrt[e*f - d*g] + I*Sqrt
[e*f + d*g])] - 2*PolyLog[2, 1/2 - (I/2)*Sqrt[(f + g*x)/(f - g*x)]] + 2*Pol
yLog[2, 1/2 + (I/2)*Sqrt[(f + g*x)/(f - g*x)]] + 2*PolyLog[2, (Sqrt[e*f + d
*g]*(1 - I*Sqrt[(f + g*x)/(f - g*x)]))/(I*Sqrt[e*f - d*g] + Sqrt[e*f + d*g]
)] - 2*PolyLog[2, (Sqrt[e*f + d*g]*(1 + I*Sqrt[(f + g*x)/(f - g*x)]))/((-I)
*Sqrt[e*f - d*g] + Sqrt[e*f + d*g])] - 2*PolyLog[2, (Sqrt[e*f + d*g]*(1 + I
*Sqrt[(f + g*x)/(f - g*x)]))/(I*Sqrt[e*f - d*g] + Sqrt[e*f + d*g])] + 2*Pol
yLog[2, (Sqrt[e*f + d*g]*(I + Sqrt[(f + g*x)/(f - g*x)]))/(Sqrt[e*f - d*g]
+ I*Sqrt[e*f + d*g])]))/(g*Sqrt[f + g*x])
```

Maple [F] time = 1.158, size = 0, normalized size = 0.

$$\int (a + b\ln\left(c\,(ex + d)^n\right))\frac{1}{\sqrt{-gx + f}}\frac{1}{\sqrt{gx + f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\sqrt{gx + f}\sqrt{-gx + f}b\log\left((ex + d)^n c\right) + \sqrt{gx + f}\sqrt{-gx + f}a}{g^2x^2 - f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(-(sqrt(g*x + f)*sqrt(-g*x + f)*b*log((e*x + d)^n*c) + sqrt(g*x + f
)*sqrt(-g*x + f)*a)/(g^2*x^2 - f^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\log\left(c\left(d + ex\right)^{n}\right)}{\sqrt{f - gx}\sqrt{f + gx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(-g*x+f)**(1/2)/(g*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(sqrt(f - g*x)*sqrt(f + g*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(ex + d\right)^{n}c\right) + a}{\sqrt{gx + f}\sqrt{-gx + f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(-g*x+f)^(1/2)/(g*x+f)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/(sqrt(g*x + f)*sqrt(-g*x + f)), x)
```

3.279 $\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=24

$$\frac{\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}$$

```
[Out] PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f)
```

Rubi [A] time = 0.0314029, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {2402, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*e)/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f)
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx, x, \frac{1}{e+fx}\right)}{f}\\ &= \frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}\end{aligned}$$

Mathematica [A] time = 0.0056395, size = 27, normalized size = 1.12

$$\frac{\text{PolyLog}\left(2,\frac{fx-e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*e)/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] PolyLog[2, (-e + f*x)/(e + f*x)]/(2*e*f)
```

Maple [A] time = 0.06, size = 20, normalized size = 0.8

$$\frac{1}{2fe}\mathrm{dilog}\left(2\frac{e}{fx+e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*e/(f*x+e))/(-f^2*x^2+e^2),x)
```

```
[Out] 1/2/f/e*dilog(2*e/(f*x+e))
```

Maxima [B] time = 1.19639, size = 162, normalized size = 6.75

$$\frac{1}{4}f\left(\frac{\log\left(fx+e\right)^{2}-2\log\left(fx+e\right)\log\left(fx-e\right)}{ef^{2}}+\frac{2\left(\log\left(fx+e\right)\log\left(-\frac{fx+e}{2e}+1\right)+\mathrm{Li}_{2}\left(\frac{fx+e}{2e}\right)\right)}{ef^{2}}\right)+\frac{1}{2}\left(\frac{\log\left(fx+e\right)}{ef}-\frac{\mathrm{lo}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/4*f*((log(f*x + e)^2 - 2*log(f*x + e)*log(f*x - e))/(e*f^2) + 2*(log(f*x
+ e)*log(-1/2*(f*x + e)/e + 1) + dilog(1/2*(f*x + e)/e))/(e*f^2)) + 1/2*(lo
g(f*x + e)/(e*f) - log(f*x - e)/(e*f))*log(2*e/(f*x + e))
```

Fricas [A] time = 1.60103, size = 50, normalized size = 2.08

$$\frac{\mathrm{Li}_{2}\left(-\frac{2e}{fx+e}+1\right)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*e/(f*x + e) + 1)/(e*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{\log\left(2\right)}{-e^{2}+f^{2}x^{2}}\,dx-\int\frac{\log\left(\frac{e}{e+fx}\right)}{-e^{2}+f^{2}x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*e/(f*x+e))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(log(2)/(-e**2 + f**2*x**2), x) - Integral(log(e/(e + f*x))/(-e**2
 + f**2*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{2e}{fx+e}\right)}{f^2x^2 - e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-log(2*e/(f*x + e))/(f^2*x^2 - e^2), x)
```

3.280 $\int \frac{\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=42

$$\frac{\operatorname{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}-\frac{\log(2)\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

```
[Out] -((ArcTanh[(f*x)/e]*Log[2])/(e*f)) + PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f
)
```

Rubi [A] time = 0.0544162, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {2403, 208, 2402, 2315}

$$\frac{\operatorname{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}-\frac{\log(2)\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[Log[e/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] -((ArcTanh[(f*x)/e]*Log[2])/(e*f)) + PolyLog[2, 1 - (2*e)/(e + f*x)]/(2*e*f
)
```

Rule 2403

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[(2*d)/(d + e*x)]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx = -\left(\log(2)\int \frac{1}{e^2-f^2x^2}\,dx\right) + \int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$$
$$= -\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef} + \frac{\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx, x, \frac{1}{e+fx}\right)}{f}$$
$$= -\frac{\tanh^{-1}\left(\frac{fx}{e}\right)\log(2)}{ef} + \frac{\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

Mathematica [A] time = 0.0158733, size = 81, normalized size = 1.93

$$\frac{\text{PolyLog}\left(2,\frac{e+fx}{2e}\right)}{2ef} - \frac{\log^2\left(\frac{e}{e+fx}\right)}{4ef} - \frac{\log\left(\frac{e-fx}{2e}\right)\log\left(\frac{e}{e+fx}\right)}{2ef}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[e/(e + f*x)]/(e^2 - f^2*x^2),x]
```

```
[Out] -(Log[(e - f*x)/(2*e)]*Log[e/(e + f*x)])/(2*e*f) - Log[e/(e + f*x)]^2/(4*e*
f) + PolyLog[2, (e + f*x)/(2*e)]/(2*e*f)
```

Maple [B] time = 0.062, size = 84, normalized size = 2.

$$-\frac{1}{2fe}\ln\left(1-2\frac{e}{fx+e}\right)\ln\left(\frac{e}{fx+e}\right)+\frac{1}{2fe}\ln\left(1-2\frac{e}{fx+e}\right)\ln\left(2\frac{e}{fx+e}\right)+\frac{1}{2fe}\text{dilog}\left(2\frac{e}{fx+e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e/(f*x+e))/(-f^2*x^2+e^2),x)
```

```
[Out] -1/2/f/e*ln(1-2*e/(f*x+e))*ln(e/(f*x+e))+1/2/f/e*ln(1-2*e/(f*x+e))*ln(2*e/(
f*x+e))+1/2/f/e*dilog(2*e/(f*x+e))
```

Maxima [B] time = 1.09472, size = 161, normalized size = 3.83

$$\frac{1}{4}f\left(\frac{\log\left(fx+e\right)^2-2\log\left(fx+e\right)\log\left(fx-e\right)}{ef^2}+\frac{2\left(\log\left(fx+e\right)\log\left(-\frac{fx+e}{2e}+1\right)+\text{Li}_2\left(\frac{fx+e}{2e}\right)\right)}{ef^2}\right)+\frac{1}{2}\left(\frac{\log\left(fx+e\right)}{ef}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/4*f*((log(f*x + e)^2 - 2*log(f*x + e)*log(f*x - e))/(e*f^2) + 2*(log(f*x
+ e)*log(-1/2*(f*x + e)/e + 1) + dilog(1/2*(f*x + e)/e))/(e*f^2)) + 1/2*(lo
g(f*x + e)/(e*f) - log(f*x - e)/(e*f))*log(e/(f*x + e))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\log\left(\frac{e}{fx+e}\right)}{f^2x^2-e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] integral(-log(e/(f*x + e))/(f^2*x^2 - e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e/(f*x+e))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(log(e/(e + f*x))/(-e**2 + f**2*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int-\frac{\log\left(\frac{e}{fx+e}\right)}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e/(f*x+e))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-log(e/(f*x + e))/(f^2*x^2 - e^2), x)
```

3.281 $\int \frac{a+b\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=41

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

```
[Out] (a*ArcTanh[(f*x)/e])/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)])/(2*e*f)
```

Rubi [A] time = 0.0605801, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {2403, 208, 2402, 2315}

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[(2*e)/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (a*ArcTanh[(f*x)/e])/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)])/(2*e*f)
```

Rule 2403

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[(2*d)/(d + e*x)]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx = a\int \frac{1}{e^2-f^2x^2}\,dx + b\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx$$
$$= \frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef} + \frac{b\,\mathrm{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx, x, \frac{1}{e+fx}\right)}{f}$$
$$= \frac{a\tanh^{-1}\left(\frac{fx}{e}\right)}{ef} + \frac{b\mathrm{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

Mathematica [A] time = 0.032232, size = 82, normalized size = 2.

$$\frac{2b^2\mathrm{PolyLog}\left(2,\frac{e+fx}{2e}\right)-\left(a+b\log\left(\frac{2e}{e+fx}\right)\right)\left(a+2b\log\left(\frac{e-fx}{2e}\right)+b\log\left(\frac{2e}{e+fx}\right)\right)}{4bef}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[(2*e)/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (-((a + b*Log[(2*e)/(e + f*x)])*(a + 2*b*Log[(e - f*x)/(2*e)] + b*Log[(2*e)
/(e + f*x)])) + 2*b^2*PolyLog[2, (e + f*x)/(2*e)])/(4*b*e*f)
```

Maple [A] time = 0.063, size = 44, normalized size = 1.1

$$-\frac{a}{2fe}\ln\left(2\frac{e}{fx+e}-1\right)+\frac{b}{2fe}\mathrm{dilog}\left(2\frac{e}{fx+e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(2*e/(f*x+e)))/(-f^2*x^2+e^2),x)
```

```
[Out] -1/2/e/f*a*ln(2*e/(f*x+e)-1)+1/2/e/f*b*dilog(2*e/(f*x+e))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{\log(fx+e)}{ef}-\frac{\log(fx-e)}{ef}\right)+b\int -\frac{\log(2)-\log(fx+e)+\log(e)}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/2*a*(log(f*x + e)/(e*f) - log(f*x - e)/(e*f)) + b*integrate(-(log(2) - lo
g(f*x + e) + log(e))/(f^2*x^2 - e^2), x)
```

Fricas [A] time = 1.75179, size = 101, normalized size = 2.46

$$\frac{b\mathrm{Li}_2\left(-\frac{2e}{fx+e}+1\right)+a\log(fx+e)-a\log(fx-e)}{2ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] 1/2*(b*dilog(-2*e/(f*x + e) + 1) + a*log(f*x + e) - a*log(f*x - e))/(e*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{a}{-e^2+f^2x^2}\,dx-\int \frac{b\log(2)}{-e^2+f^2x^2}\,dx-\int \frac{b\log\left(\frac{e}{e+fx}\right)}{-e^2+f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(2*e/(f*x+e)))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(a/(-e**2 + f**2*x**2), x) - Integral(b*log(2)/(-e**2 + f**2*x**2)
, x) - Integral(b*log(e/(e + f*x))/(-e**2 + f**2*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{b\log\left(\frac{2e}{fx+e}\right)+a}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(2*e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-(b*log(2*e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

3.282 $\int \frac{a+b\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx$

Optimal. Leaf size=47

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{(a-b\log(2))\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

```
[Out] (ArcTanh[(f*x)/e]*(a - b*Log[2]))/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)
])/(2*e*f)
```

Rubi [A] time = 0.0648044, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {2403, 208, 2402, 2315}

$$\frac{b\text{PolyLog}\left(2,1-\frac{2e}{e+fx}\right)}{2ef}+\frac{(a-b\log(2))\tanh^{-1}\left(\frac{fx}{e}\right)}{ef}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[e/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (ArcTanh[(f*x)/e]*(a - b*Log[2]))/(e*f) + (b*PolyLog[2, 1 - (2*e)/(e + f*x)
])/(2*e*f)
```

Rule 2403

```
Int[((a_.) + Log[(c_.)/((d_) + (e_.)*(x_))]*(b_.))/((f_) + (g_.)*(x_)^2), x
_Symbol] :> Dist[a + b*Log[c/(2*d)], Int[1/(f + g*x^2), x], x] + Dist[b, In
t[Log[(2*d)/(d + e*x)]/(f + g*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && EqQ[e^2*f + d^2*g, 0] && GtQ[c/(2*d), 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{a+b\log\left(\frac{e}{e+fx}\right)}{e^2-f^2x^2}\,dx = b\int \frac{\log\left(\frac{2e}{e+fx}\right)}{e^2-f^2x^2}\,dx + (a-b\log(2))\int \frac{1}{e^2-f^2x^2}\,dx$$
$$= \frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef} + \frac{b\,\text{Subst}\left(\int \frac{\log(2ex)}{1-2ex}\,dx, x, \frac{1}{e+fx}\right)}{f}$$
$$= \frac{\tanh^{-1}\left(\frac{fx}{e}\right)(a-b\log(2))}{ef} + \frac{b\text{Li}_2\left(1-\frac{2e}{e+fx}\right)}{2ef}$$

Mathematica [A] time = 0.0254576, size = 80, normalized size = 1.7

$$\frac{2b^2\text{PolyLog}\left(2,\frac{e+fx}{2e}\right)-\left(a+b\log\left(\frac{e}{e+fx}\right)\right)\left(a+2b\log\left(\frac{e-fx}{2e}\right)+b\log\left(\frac{e}{e+fx}\right)\right)}{4bef}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[e/(e + f*x)])/(e^2 - f^2*x^2),x]
```

```
[Out] (-((a + b*Log[e/(e + f*x)])*(a + 2*b*Log[(e - f*x)/(2*e)] + b*Log[e/(e + f*
x)])) + 2*b^2*PolyLog[2, (e + f*x)/(2*e)])/(4*b*e*f)
```

Maple [B] time = 0.063, size = 109, normalized size = 2.3

$$-\frac{a}{2fe}\ln\left(2\frac{e}{fx+e}-1\right)+\frac{b}{2fe}\ln\left(1-2\frac{e}{fx+e}\right)\ln\left(2\frac{e}{fx+e}\right)-\frac{b}{2fe}\ln\left(1-2\frac{e}{fx+e}\right)\ln\left(\frac{e}{fx+e}\right)+\frac{b}{2fe}\text{dilog}\left(2\frac{e}{fx+e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(e/(f*x+e)))/(-f^2*x^2+e^2),x)
```

```
[Out] -1/2/e/f*a*ln(2*e/(f*x+e)-1)+1/2/e/f*b*ln(1-2*e/(f*x+e))*ln(2*e/(f*x+e))-1/
2/e/f*b*ln(1-2*e/(f*x+e))*ln(e/(f*x+e))+1/2/e/f*b*dilog(2*e/(f*x+e))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a\left(\frac{\log\left(fx+e\right)}{ef}-\frac{\log\left(fx-e\right)}{ef}\right)+b\int \frac{\log\left(fx+e\right)-\log\left(e\right)}{f^2x^2-e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="maxima")
```

```
[Out] 1/2*a*(log(f*x + e)/(e*f) - log(f*x - e)/(e*f)) + b*integrate((log(f*x + e)
 - log(e))/(f^2*x^2 - e^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{b \log\left(\frac{e}{fx+e}\right) + a}{f^2x^2 - e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="fricas")
```

```
[Out] integral(-(b*log(e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{a}{-e^2 + f^2x^2}\,dx - \int \frac{b \log\left(\frac{e}{e+fx}\right)}{-e^2 + f^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(e/(f*x+e)))/(-f**2*x**2+e**2),x)
```

```
[Out] -Integral(a/(-e**2 + f**2*x**2), x) - Integral(b*log(e/(e + f*x))/(-e**2 +
f**2*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{b \log\left(\frac{e}{fx+e}\right) + a}{f^2x^2 - e^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(e/(f*x+e)))/(-f^2*x^2+e^2),x, algorithm="giac")
```

```
[Out] integrate(-(b*log(e/(f*x + e)) + a)/(f^2*x^2 - e^2), x)
```

3.283 $\int \frac{x^5 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=371

$$-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{\ldots}\right.}{\sqrt[3]{b}c-\sqrt[3]{\ldots}}\right.}{3b^2}$$

```
[Out] -(c^2*x)/(3*b*d^2) + (c*x^2)/(6*b*d) - x^3/(9*b) + (c^3*Log[c + d*x])/(3*b*
d^3) + (x^3*Log[c + d*x])/(3*b) - (a*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/
3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^2) - (a*Log[-((d*((-1)^(2/3)*a^(1/3)
 + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b^2) -
 (a*Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(
1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/
(b^(1/3)*c - a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1
/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))
/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*b^2)
```

Rubi [A] time = 0.595824, antiderivative size = 371, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b^2}-\frac{a\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{\ldots}\right.}{\sqrt[3]{b}c-\sqrt[3]{\ldots}}\right.}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*Log[c + d*x])/(a + b*x^3),x]
```


```
[Out] -(c^2*x)/(3*b*d^2) + (c*x^2)/(6*b*d) - x^3/(9*b) + (c^3*Log[c + d*x])/(3*b*
d^3) + (x^3*Log[c + d*x])/(3*b) - (a*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/
3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^2) - (a*Log[-((d*((-1)^(2/3)*a^(1/3)
 + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b^2) -
 (a*Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(
1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/
(b^(1/3)*c - a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1
/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*b^2) - (a*PolyLog[2, (b^(1/3)*(c + d*x))
/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*b^2)
```


Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^5\log(c+dx)}{a+bx^3}dx = \int \left(\frac{x^2\log(c+dx)}{b} - \frac{ax^2\log(c+dx)}{b\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int x^2\log(c+dx)\,dx}{b} - \frac{a\int \frac{x^2\log(c+dx)}{a+bx^3}dx}{b}$$

$$= \frac{x^3\log(c+dx)}{3b} - \frac{a\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}\right)dx}{b} - \frac{d\int \frac{x^3}{c+dx}d}{3b}$$

$$= \frac{x^3\log(c+dx)}{3b} - \frac{a\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}dx}{3b^{5/3}} - \frac{a\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x}dx}{3b^{5/3}} - \frac{a\int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x}dx}{3b^{5/3}} - \frac{d\int \left(\frac{c^2}{d^3} - \frac{cx}{d^2} +\right.}{}$$

$$= -\frac{c^2x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3\log(c+dx)}{3bd^3} + \frac{x^3\log(c+dx)}{3b} - \frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^2} - \frac{a\log}{}$$

$$= -\frac{c^2x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3\log(c+dx)}{3bd^3} + \frac{x^3\log(c+dx)}{3b} - \frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^2} - \frac{a\log}{}$$

$$= -\frac{c^2x}{3bd^2} + \frac{cx^2}{6bd} - \frac{x^3}{9b} + \frac{c^3\log(c+dx)}{3bd^3} + \frac{x^3\log(c+dx)}{3b} - \frac{a\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^2} - \frac{a\log}{}$$

Mathematica [A] time = 0.327861, size = 345, normalized size = 0.93

$$-\frac{6ad^3\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + 6ad^3\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right) + 6ad^3\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right) + 6ad^3\log(c+dx)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(6*b*c^2*d*x - 3*b*c*d^2*x^2 + 2*b*d^3*x^3 - 6*b*c^3*Log[c + d*x] - 6*b*d^
3*x^3*Log[c + d*x] + 6*a*d^3*Log[(d*((-1)^(1/3)*a^(1/3) - b^(1/3)*x))/(b^(1
/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x] + 6*a*d^3*Log[(d*(a^(1/3) + b^(
1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + 6*a*d^3*Log[(d*((-1)^(2
/3)*a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + (-1)^(2/3)*a^(1/3)*d)]*Log[c + d*
x] + 6*a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] + 6*a*
d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)] + 6*
a*d^3*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(
18*b^2*d^3)
```

Maple [C] time = 0.39, size = 153, normalized size = 0.4

$$\frac{x^3\ln(dx+c)}{3b} + \frac{c^3\ln(dx+c)}{3bd^3} - \frac{x^3}{9b} + \frac{cx^2}{6bd} - \frac{c^2x}{3bd^2} - \frac{11c^3}{18bd^3} - \frac{a}{3b^2}\sum_{\_R1=\text{RootOf}\left(b\_Z^3-3bc\_Z^2+3c^2b\_Z+ad^3-bc^3\right)} \ln(dx+c)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/3*x^3*ln(d*x+c)/b+1/3*c^3*ln(d*x+c)/b/d^3-1/9*x^3/b+1/6*c*x^2/b/d-1/3/b/d
^2*c^2*x-11/18/b/d^3*c^3-1/3*a/b^2*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog
((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^5*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{x^5 \log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^5*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^5*log(d*x + c)/(b*x^3 + a), x)
```

3.284 $\int \frac{x^2 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=292

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+$$

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*
b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```

Rubi [A] time = 0.277219, antiderivative size = 292, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {260, 2416, 2394, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[c + d*x])/(a + b*x^3),x]
```


```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*
b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```


Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}+\frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)}+\frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}\right)dx$$

$$=\frac{\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{2/3}}+\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{2/3}}+\frac{\int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{2/3}}$$

$$=\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)\mathrm{lo}}{3b}$$

$$=\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)\mathrm{lo}}{3b}$$

$$=\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3b}+\frac{\log\left(\frac{\sqrt[3]{-1}d\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}{\sqrt[3]{b}c+\sqrt[3]{-1}\sqrt[3]{a}d}\right)\mathrm{lo}}{3b}$$

Mathematica [A] time = 0.0530706, size = 297, normalized size = 1.02

$$\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3b}+\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3b}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b}+\mathrm{lo}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*b) + (Log[-(((-1)^(2/3)*d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (
-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*b) + (Log[((-1)^(1/3)*d*(a^(1/3) +
(-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3
*b) + PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*b) + PolyL
og[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*b)
```

Maple [C] time = 0.383, size = 77, normalized size = 0.3

$$\frac{1}{3\,b}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Z\,bc^2+ad^3-bc^3\right)}\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/3/b*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 \log(dx+c)}{bx^3+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(x^2*log(d*x + c)/(b*x^3 + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^2 \log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 \log(dx+c)}{bx^3+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^2*log(d*x + c)/(b*x^3 + a), x)
```

3.285 $\int \frac{\log(c+dx)}{x\left(a+bx^3\right)}\,dx$

Optimal. Leaf size=324

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a}+\frac{\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a}-\log(c+d$$

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-((d*((-1)^(2/3)*a^(1/3) + b^
(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[(
(-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1
/3)*d)]*Log[c + d*x])/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d)]/(3*a) + PolyLog[2, 1 + (d*x)/c]/a
```

Rubi [A] time = 0.429403, antiderivative size = 324, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {266, 36, 29, 31, 2416, 2394, 2315, 260, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a}+\frac{\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a}-\log(c+d$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x*(a + b*x^3)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-((d*((-1)^(2/3)*a^(1/3) + b^
(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[(
(-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1
/3)*d)]*Log[c + d*x])/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a
^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a
^(1/3)*d)]/(3*a) + PolyLog[2, 1 + (d*x)/c]/a
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x(a+bx^3)}\,dx = \int \left(\frac{\log(c+dx)}{ax} - \frac{bx^2\log(c+dx)}{a(a+bx^3)}\right) dx$$

$$= \frac{\int \frac{\log(c+dx)}{x}\,dx}{a} - \frac{b\int \frac{x^2\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{b\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}\right) dx}{a} - \frac{d\int \frac{\log(-}{c+d}}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a} - \frac{\sqrt[3]{b}\int \frac{\log(c+dx)}{(-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{}}}{3a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log(-}{}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log(-}{}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log\left(-\frac{d\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)\log(c+dx)}{3a} - \frac{\log(-}{}$$

Mathematica [A] time = 0.088657, size = 330, normalized size = 1.02

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a} - \frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a} - \frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a} + \frac{\text{PolyLog}\left(2,\frac{c+dx}{c}\right)}{a} - \frac{\log(c+dx)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x*(a + b*x^3)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3
)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a) - (Log[-(((-1)^(2/3)*d*(a^(1/3) - (-
1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*
a) - (Log[((-1)^(1/3)*d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)
^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3*a) + PolyLog[2, (c + d*x)/c]/a - PolyLo
g[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]/(3*a) - PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)]/(3*a)
```

Maple [C] time = 0.378, size = 108, normalized size = 0.3

$$\frac{\ln(dx+c)}{a}\ln\left(-\frac{dx}{c}\right) + \frac{1}{a}\text{dilog}\left(-\frac{dx}{c}\right) - \frac{1}{3a}\sum_{\_R1=\text{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Zbc^2+ad^3-bc^3\right)} \ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right) + \text{dilo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x/(b*x^3+a),x)
```

```
[Out] ln(-d*x/c)*ln(d*x+c)/a+1/a*dilog(-d*x/c)-1/3/a*sum(ln(d*x+c)*ln((-d*x+_R1-c
)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^
3-b*c^3))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^3+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(dx+c)}{bx^4+ax}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^4 + a*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^3+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x), x)
```

3.286 $\int \frac{\log(c+dx)}{x^4(a+bx^3)}\,dx$

Optimal. Leaf size=414

$$\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^2}+\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a^2}+\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a^2}-\frac{b\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a^2}-\frac{b\log(}{}$$

```
[Out] -d/(6*a*c*x^2) + d^2/(3*a*c^2*x) + (d^3*Log[x])/(3*a*c^3) - (d^3*Log[c + d*
x])/(3*a*c^3) - Log[c + d*x]/(3*a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])/a
^2 + (b*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d
*x])/(3*a^2) + (b*Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (
-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1/3
) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x]
)/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*
a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)
])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1
/3)*d)])/(3*a^2) - (b*PolyLog[2, 1 + (d*x)/c])/a^2
```

Rubi [A] time = 0.495631, antiderivative size = 414, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.474, Rules used = {266, 44, 2416, 2395, 2394, 2315, 260, 2393, 2391}

$$\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^2}+\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a^2}+\frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a^2}-\frac{b\text{PolyLog}\left(2,\frac{dx}{c}+1\right)}{a^2}-\frac{b\log(}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^4*(a + b*x^3)),x]
```


```
[Out] -d/(6*a*c*x^2) + d^2/(3*a*c^2*x) + (d^3*Log[x])/(3*a*c^3) - (d^3*Log[c + d*
x])/(3*a*c^3) - Log[c + d*x]/(3*a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])/a
^2 + (b*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d
*x])/(3*a^2) + (b*Log[-((d*((-1)^(2/3)*a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - (
-1)^(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1/3
) + (-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x]
)/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*
a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)
])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1
/3)*d)])/(3*a^2) - (b*PolyLog[2, 1 + (d*x)/c])/a^2
```


Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^4(a+bx^3)}dx = \int \left(\frac{\log(c+dx)}{ax^4} - \frac{b\log(c+dx)}{a^2x} + \frac{b^2x^2\log(c+dx)}{a^2(a+bx^3)}\right)dx$$
$$= \frac{\int \frac{\log(c+dx)}{x^4}dx}{a} - \frac{b\int \frac{\log(c+dx)}{x}dx}{a^2} + \frac{b^2\int \frac{x^2\log(c+dx)}{a+bx^3}dx}{a^2}$$
$$= -\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b^2\int \left(\frac{\log(c+dx)}{3b^{2/3}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left(-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x\right)} + \frac{\log(c+dx)}{3b^{2/3}\left((-1)^{2/3}\sqrt[3]{a}+\sqrt[3]{}\right.}\right.}{a^2}$$
$$= -\frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} - \frac{b\operatorname{Li}_2\left(1+\frac{dx}{c}\right)}{a^2} + \frac{b^{4/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}dx}{3a^2} + \frac{b^{4/3}\int \frac{\log(c+dx)}{-\sqrt[3]{-1}\sqrt[3]{a}+\sqrt[3]{b}x}d}{3a^2}$$
$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b\log\left(-\frac{d(}{}\right.}{}$$
$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b\log\left(-\frac{d(}{}\right.}{}$$
$$= -\frac{d}{6acx^2} + \frac{d^2}{3ac^2x} + \frac{d^3\log(x)}{3ac^3} - \frac{d^3\log(c+dx)}{3ac^3} - \frac{\log(c+dx)}{3ax^3} - \frac{b\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a^2} + \frac{b\log\left(-\frac{d(}{}\right.}{}$$

Mathematica [A] time = 0.139216, size = 405, normalized size = 0.98

$$-\frac{b\text{PolyLog}\left(2,\frac{c+dx}{c}\right)}{a^2} + \frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^2} + \frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{-1}\sqrt[3]{a}d+\sqrt[3]{b}c}\right)}{3a^2} + \frac{b\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-(-1)^{2/3}\sqrt[3]{a}d}\right)}{3a^2} - \frac{b\log(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^4*(a + b*x^3)),x]
```

```
[Out] -Log[c + d*x]/(3*a*x^3) - (b*Log[-((d*x)/c)]*Log[c + d*x])/a^2 + (b*Log[-((
d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^2) +
(b*Log[-(((-1)^(2/3)*d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(b^(1/3)*c - (-1)^
(2/3)*a^(1/3)*d))]*Log[c + d*x])/(3*a^2) + (b*Log[((-1)^(1/3)*d*(a^(1/3) +
(-1)^(2/3)*b^(1/3)*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)]*Log[c + d*x])/(3
*a^2) - (d*(1/(c*x^2) - (2*d)/(c^2*x) - (2*d^2*Log[x])/c^3 + (2*d^2*Log[c +
 d*x])/c^3))/(6*a) - (b*PolyLog[2, (c + d*x)/c])/a^2 + (b*PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^2) + (b*PolyLog[2, (b^(1/3)*(c
 + d*x))/(b^(1/3)*c + (-1)^(1/3)*a^(1/3)*d)])/(3*a^2) + (b*PolyLog[2, (b^(1
/3)*(c + d*x))/(b^(1/3)*c - (-1)^(2/3)*a^(1/3)*d)])/(3*a^2)
```

Maple [C] time = 0.417, size = 185, normalized size = 0.5

$$-\frac{b\ln(dx+c)}{a^2}\ln\left(-\frac{dx}{c}\right) - \frac{b}{a^2}\operatorname{dilog}\left(-\frac{dx}{c}\right) + \frac{b}{3a^2}\sum_{\_R1=\operatorname{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Zbc^2+ad^3-bc^3\right)}\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^4/(b*x^3+a),x)
```

```
[Out] -b*ln(-d*x/c)*ln(d*x+c)/a^2-b/a^2*dilog(-d*x/c)+1/3*b/a^2*sum(ln(d*x+c)*ln(
(-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z
*b*c^2+a*d^3-b*c^3))+1/3*d^3/a/c^3*ln(d*x)+1/3*d^2/a/c^2/x-1/6*d/a/c/x^2-1/
3*d^3*ln(d*x+c)/a/c^3-1/3*ln(d*x+c)/a/x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^3+a)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(dx+c)}{bx^7+ax^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^7 + a*x^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**4/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^3+a)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^4/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^4), x)
```

3.287 $\int \frac{x^4 \log(c+dx)}{a+bx^3} \, dx$

Optimal. Leaf size=416

$$\frac{a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}+\frac{(-1)^{2/3}a^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}-\frac{\sqrt[3]{-1}a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{5/3}}+\frac{a^{2/3}\log(c+}{}$$

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) + (a^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d)
)]*Log[c + d*x])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*Log[(d*(a^(1/3) - (-1)^(
1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*b^(5/
3)) + ((-1)^(2/3)*a^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^
(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(5/3)) + (a^(2/3)*PolyLog
[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*b^(5/3)) + ((-1)^(2/3)
*a^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d)])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/
3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(5/3))
```

Rubi [A] time = 0.700564, antiderivative size = 416, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.684, Rules used = {321, 292, 31, 634, 617, 204, 628, 2416, 2395, 43, 2394, 2393, 2391}

$$\frac{a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}+\frac{(-1)^{2/3}a^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{5/3}}-\frac{\sqrt[3]{-1}a^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{5/3}}+\frac{a^{2/3}\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) + (a^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d)
)]*Log[c + d*x])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*Log[(d*(a^(1/3) - (-1)^(
1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*b^(5/
3)) + ((-1)^(2/3)*a^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^
(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(5/3)) + (a^(2/3)*PolyLog
[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*b^(5/3)) + ((-1)^(2/3)
*a^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d)])/(3*b^(5/3)) - ((-1)^(1/3)*a^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/
3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(5/3))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
```

```
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^4\log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{x\log(c+dx)}{b} - \frac{ax\log(c+dx)}{b\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int x\log(c+dx)\,dx}{b} - \frac{a\int \frac{x\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{a\int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx}{b} - \frac{d\int \frac{x^2}{c+d \cdots}}{2b}$$

$$= \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3b^{4/3}} - \frac{\left(\sqrt[3]{-1}a^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3b^{4/3}} + \frac{\left((-1)^{2/3}a^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x}\,d \cdots}{3b^{4/3}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{5/3}} - \frac{\sqrt[3]{-1}a^{2/3}\log\left(\cdots\right.}{\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{5/3}} - \frac{\sqrt[3]{-1}a^{2/3}\log\left(\cdots\right.}{\cdots}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{a^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{5/3}} - \frac{\sqrt[3]{-1}a^{2/3}\log\left(\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.322644, size = 403, normalized size = 0.97

$$\frac{4a^{2/3}d^2\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + 4(-1)^{2/3}a^{2/3}d^2\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - 4\sqrt[3]{-1}a^{2/3}d^2\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right) + 4a^2 \cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (6*b^(2/3)*c*d*x - 3*b^(2/3)*d^2*x^2 - 6*b^(2/3)*c^2*Log[c + d*x] + 6*b^(2/
3)*d^2*x^2*Log[c + d*x] + 4*a^(2/3)*d^2*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^
(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - 4*(-1)^(1/3)*a^(2/3)*d^2*Log[(d*(a^(1
/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*
x] + 4*(-1)^(2/3)*a^(2/3)*d^2*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((
```

```
-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + 4*a^(2/3)*d^2*PolyLog[2,
(b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] + 4*(-1)^(2/3)*a^(2/3)*d^2*Pol
yLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)]
- 4*(-1)^(1/3)*a^(2/3)*d^2*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)])/(12*b^(5/3)*d^2)
```

Maple [C] time = 0.373, size = 148, normalized size = 0.4

$$\frac{x^2 \ln(dx+c)}{2b} - \frac{c^2 \ln(dx+c)}{2bd^2} - \frac{x^2}{4b} + \frac{cx}{2bd} + \frac{3c^2}{4bd^2} - \frac{ad}{3b^2} \sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Z\,bc^2+ad^3-bc^3\right)} \frac{1}{\_R1-c}\left(\ln(dx+c)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/2*x^2*ln(d*x+c)/b-1/2*c^2*ln(d*x+c)/b/d^2-1/4*x^2/b+1/2/b/d*c*x+3/4*c^2/b
/d^2-1/3*d*a/b^2*sum(1/(_R1-c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+
_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^4 \log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^4*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4 \log(dx + c)}{bx^3 + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^4*log(d*x + c)/(b*x^3 + a), x)
```

3.288 $\int \frac{x^3 \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=383

$$-\frac{\sqrt[3]{a}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}+\frac{\sqrt[3]{-1}\sqrt[3]{a}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{4/3}}-\frac{\sqrt[3]{a}\log(c}{}$$

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) - (a^(1/3)*Log[-((d*(a^(1/3) + b^(1
/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(4/3)) - ((-1)^(2/3)*a
^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(
1/3)*d)]*Log[c + d*x])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*Log[-((d*(a^(1/3)
+ (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])
/(3*b^(4/3)) - (a^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)
*d)])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c +
 d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*b^(4/3)) - ((-1)^(2/3)*a^(1/
3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3
)*d)])/(3*b^(4/3))
```

Rubi [A] time = 0.446121, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {321, 200, 31, 634, 617, 204, 628, 2416, 2389, 2295, 2409, 2394, 2393, 2391}

$$-\frac{\sqrt[3]{a}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}+\frac{\sqrt[3]{-1}\sqrt[3]{a}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3b^{4/3}}-\frac{(-1)^{2/3}\sqrt[3]{a}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3b^{4/3}}-\frac{\sqrt[3]{a}\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) - (a^(1/3)*Log[-((d*(a^(1/3) + b^(1
/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*b^(4/3)) - ((-1)^(2/3)*a
^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(
1/3)*d)]*Log[c + d*x])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*Log[-((d*(a^(1/3)
+ (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])
/(3*b^(4/3)) - (a^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)
*d)])/(3*b^(4/3)) + ((-1)^(1/3)*a^(1/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c +
 d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*b^(4/3)) - ((-1)^(2/3)*a^(1/
3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3
)*d)])/(3*b^(4/3))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
```

```
reeQ[{a, b}, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3\log(c+dx)}{a+bx^3}\,dx = \int \left(\frac{\log(c+dx)}{b} - \frac{a\log(c+dx)}{b\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \log(c+dx)\,dx}{b} - \frac{a\int \frac{\log(c+dx)}{a+bx^3}\,dx}{b}$$

$$= -\frac{a\int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx}{b} + \frac{\text{Subst}(\int \log(x)\,dx, x, c}{bd}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}x}\,dx}{3b} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3b} + \frac{\sqrt[3]{a}\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x}}{3b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3b^{4/3}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3b^{4/3}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt[3]{a}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3b^{4/3}} - \frac{(-1)^{2/3}\sqrt[3]{a}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)}{3b^{4/3}}$$

Mathematica [A] time = 0.131881, size = 369, normalized size = 0.96

$$\frac{-\sqrt[3]{a}d\,\text{PolyLog}\left(2, \frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + \sqrt[3]{-1}\sqrt[3]{a}d\,\text{PolyLog}\left(2, \frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - (-1)^{2/3}\sqrt[3]{a}d\,\text{PolyLog}\left(2, \frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right) - \sqrt[3]{a}d\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (-3*b^(1/3)*d*x + 3*b^(1/3)*c*Log[c + d*x] + 3*b^(1/3)*d*x*Log[c + d*x] - a
^(1/3)*d*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c +
d*x] - (-1)^(2/3)*a^(1/3)*d*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^
```

```
(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x] + (-1)^(1/3)*a^(1/3)*d*Log[(d*(a
^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[
c + d*x] - a^(1/3)*d*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)
] + (-1)^(1/3)*a^(1/3)*d*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2
/3)*b^(1/3)*c - a^(1/3)*d)] - (-1)^(2/3)*a^(1/3)*d*PolyLog[2, ((-1)^(1/3)*b
^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*b^(4/3)*d)
```

Maple [C] time = 0.384, size = 136, normalized size = 0.4

$$\frac{\ln(dx+c)\,x}{b}+\frac{\ln(dx+c)\,c}{bd}-\frac{x}{b}-\frac{c}{bd}-\frac{ad^2}{3\,b^2}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Z\,bc^2+ad^3-bc^3\right)}\frac{1}{\_R1^2-2\_R1\,c+c^2}\left(\ln(dx+c)\ln\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/b*ln(d*x+c)*x+1/d/b*ln(d*x+c)*c-x/b-1/d/b*c-1/3*d^2*a/b^2*sum(1/(_R1^2-2*
_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=Roo
tOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^3\log(dx+c)}{bx^3+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 \log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^3 + a), x)
```

3.289 $\int \frac{x \log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=359

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}+\frac{\sqrt[3]{-1}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{\log(c+dx)\log\left(-\frac{d(\sqrt[3]{}}{\sqrt[3]{b}}\right.}{3\sqrt[3]{a}b^{2/3}}$$

```
[Out] -(Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(
3*a^(1/3)*b^(2/3)) + ((-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(
(-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - ((-1
)^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d))]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - PolyLog[2, (b^(1/3)*(c + d
*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(1/3)*b^(2/3)) - ((-1)^(2/3)*PolyLog[2,
((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(1
/3)*b^(2/3)) + ((-1)^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(1/3)*b^(2/3))
```

Rubi [A] time = 0.314536, antiderivative size = 359, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.588, Rules used = {292, 31, 634, 617, 204, 628, 2416, 2394, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3\sqrt[3]{a}b^{2/3}}+\frac{\sqrt[3]{-1}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3\sqrt[3]{a}b^{2/3}}-\frac{\log(c+dx)\log\left(-\frac{d(\sqrt[3]{}}{\sqrt[3]{b}}\right.}{3\sqrt[3]{a}b^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] -(Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(
3*a^(1/3)*b^(2/3)) + ((-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/(
(-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - ((-1
)^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c -
a^(1/3)*d))]*Log[c + d*x])/(3*a^(1/3)*b^(2/3)) - PolyLog[2, (b^(1/3)*(c + d
*x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(1/3)*b^(2/3)) - ((-1)^(2/3)*PolyLog[2,
((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(1
/3)*b^(2/3)) + ((-1)^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^
(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(1/3)*b^(2/3))
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
```

```
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x\log(c+dx)}{a+bx^3}\,dx = \int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}} + \frac{\sqrt[3]{-1}\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}} - \frac{(-1)^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3\sqrt[3]{a}\sqrt[3]{b}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} - \frac{(-1)^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\ldots\right.}{(-1)^{2/3}\sqrt[3]{b}c-\ldots}\right.}{3\sqrt[3]{a}b^{2/3}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} - \frac{(-1)^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\ldots\right.}{(-1)^{2/3}\sqrt[3]{b}c-\ldots}\right.}{3\sqrt[3]{a}b^{2/3}}$$

$$= -\frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} + \frac{\sqrt[3]{-1}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3\sqrt[3]{a}b^{2/3}} - \frac{(-1)^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\ldots\right.}{(-1)^{2/3}\sqrt[3]{b}c-\ldots}\right.}{3\sqrt[3]{a}b^{2/3}}$$

Mathematica [A] time = 0.0868104, size = 297, normalized size = 0.83

$$\frac{-\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - (-1)^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + \sqrt[3]{-1}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right) + \log(c+dx)\left(-\log\left(\frac{d(\ldots}{\ldots}\right.\right.}{3\sqrt[3]{a}b^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[c + d*x])/(a + b*x^3),x]
```

```
[Out] (-(Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x])
+ (-1)^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c
 + a^(1/3)*d)]*Log[c + d*x] - (-1)^(2/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/
3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - PolyLog[2, (b^
(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] - (-1)^(2/3)*PolyLog[2, ((-1)^(2/
3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] + (-1)^(1/3)*Poly
Log[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/
(3*a^(1/3)*b^(2/3))
```

Maple [C] time = 0.38, size = 86, normalized size = 0.2

$$\frac{d}{3b}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Z\,bc^2+ad^3-bc^3\right)}\frac{1}{\_R1-c}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/3*d/b*sum(1/(_R1-c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R
1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x\log\left(dx+c\right)}{bx^3+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x\log\left(dx+c\right)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^3 + a), x)
```

3.290 $\int \frac{\log(c+dx)}{a+bx^3} dx$

Optimal. Leaf size=359

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\right.}{\sqrt[3]{b}c-}\right.}{3a^{2/3}\sqrt[3]{b}}$$

```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*a^(2/3)*b^(1/3)) + ((-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((
-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) - ((-1)
^(1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a
^(1/3)*d))]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) + PolyLog[2, (b^(1/3)*(c + d*
x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(2/3)*b^(1/3)) - ((-1)^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(2/
3)*b^(1/3)) + ((-1)^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(2/3)*b^(1/3))
```

Rubi [A] time = 0.238828, antiderivative size = 359, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2409, 2394, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}-\frac{\sqrt[3]{-1}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{(-1)^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{2/3}\sqrt[3]{b}}+\frac{\log(c+dx)\log\left(-\frac{d\left(\sqrt[3]{a}+\right.}{\sqrt[3]{b}c-}\right.}{3a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(a + b*x^3),x]
```


```
[Out] (Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3
*a^(2/3)*b^(1/3)) + ((-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((
-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) - ((-1)
^(1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a
^(1/3)*d))]*Log[c + d*x])/(3*a^(2/3)*b^(1/3)) + PolyLog[2, (b^(1/3)*(c + d*
x))/(b^(1/3)*c - a^(1/3)*d)]/(3*a^(2/3)*b^(1/3)) - ((-1)^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(2/
3)*b^(1/3)) + ((-1)^(2/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(2/3)*b^(1/3))
```


Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{a+bx^3}\,dx = \int \left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x\right)}\right) dx$$

$$= -\frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}x}\,dx}{3a^{2/3}} - \frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3a^{2/3}} - \frac{\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{2/3}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}} + \frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}} - \frac{\sqrt[3]{-1}\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\ldots\right.}{(-1)^{2/3}\sqrt[3]{b}c-\ldots}\right.}{3a^{2/3}\sqrt[3]{\ldots}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}} + \frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}} - \frac{\sqrt[3]{-1}\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\ldots\right.}{(-1)^{2/3}\sqrt[3]{b}c-\ldots}\right.}{3a^{2/3}\sqrt[3]{\ldots}}$$

$$= \frac{\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}} + \frac{(-1)^{2/3}\log\left(\frac{d\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)}{\sqrt[3]{-1}\sqrt[3]{b}c+\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{2/3}\sqrt[3]{b}} - \frac{\sqrt[3]{-1}\log\left(-\frac{d\left(\sqrt[3]{a}+(-1)^{2/3}\ldots\right.}{(-1)^{2/3}\sqrt[3]{b}c-\ldots}\right.}{3a^{2/3}\sqrt[3]{\ldots}}$$

Mathematica [A] time = 0.0696822, size = 294, normalized size = 0.82

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - \sqrt[3]{-1}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + (-1)^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right) + \log(c+dx)\log\left(\frac{d\left(\sqrt[3]{a}-\ldots\right.}{\sqrt[3]{a}d-\ldots}\right.\ldots}{3a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(a + b*x^3),x]
```

```
[Out] (Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + (
-1)^(2/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c +
a^(1/3)*d)]*Log[c + d*x] - (-1)^(1/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*
x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] + PolyLog[2, (b^(1/
3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)] - (-1)^(1/3)*PolyLog[2, ((-1)^(2/3)*
b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] + (-1)^(2/3)*PolyLog
[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*
a^(2/3)*b^(1/3))
```

Maple [C] time = 0.377, size = 94, normalized size = 0.3

$$\frac{d^2}{3b}\sum_{\_R1=\text{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Z\,bc^2+ad^3-bc^3\right)}\frac{1}{\_R1^2-2\_R1\,c+c^2}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_R1\ldots}{\_R1}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/(b*x^3+a),x)
```

```
[Out] 1/3*d^2/b*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(dx+c)}{bx^3+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^3 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{bx^3+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/(b*x^3 + a), x)
```

3.291 $\int \frac{\log(c+dx)}{x^2(a+bx^3)}\,dx$

Optimal. Leaf size=398

$$\frac{\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{(-1)^{2/3}\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{4/3}}+\frac{\sqrt[3]{b}\log(c+}{}$$

```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/3)*L
og[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a
^(4/3)) - ((-1)^(1/3)*b^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1
)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(4/3)) + ((-1)^(2/3)*b^(
1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(
1/3)*d))]*Log[c + d*x])/(3*a^(4/3)) + (b^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x
))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/3)) + ((-1)^(2/3)*b^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/
3)) - ((-1)^(1/3)*b^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(4/3))
```

Rubi [A] time = 0.493723, antiderivative size = 398, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {325, 292, 31, 634, 617, 204, 628, 2416, 2395, 36, 29, 2394, 2393, 2391}

$$\frac{\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}+\frac{(-1)^{2/3}\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{4/3}}-\frac{\sqrt[3]{-1}\sqrt[3]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{4/3}}+\frac{\sqrt[3]{b}\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^2*(a + b*x^3)),x]
```


```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/3)*L
og[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a
^(4/3)) - ((-1)^(1/3)*b^(1/3)*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*x))/((-1
)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x])/(3*a^(4/3)) + ((-1)^(2/3)*b^(
1/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/((-1)^(2/3)*b^(1/3)*c - a^(
1/3)*d))]*Log[c + d*x])/(3*a^(4/3)) + (b^(1/3)*PolyLog[2, (b^(1/3)*(c + d*x
))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/3)) + ((-1)^(2/3)*b^(1/3)*PolyLog[2, (
(-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)])/(3*a^(4/
3)) - ((-1)^(1/3)*b^(1/3)*PolyLog[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(
1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(4/3))
```


Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
```

```
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^2\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^2} - \frac{bx\log(c+dx)}{a\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^2}\,dx}{a} - \frac{b\int \frac{x\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} - \frac{b\int \left(-\frac{\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)} - \frac{(-1)^{2/3}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x\right)} + \frac{\sqrt[3]{-1}\log(c+dx)}{3\sqrt[3]{a}\sqrt[3]{b}\left(\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx}{a} + \frac{d\int \frac{}{x(c\cdots}}{a\cdots}$$

$$= -\frac{\log(c+dx)}{ax} + \frac{b^{2/3}\int \frac{\log(c+dx)}{\sqrt[3]{a}+\sqrt[3]{b}x}\,dx}{3a^{4/3}} - \frac{\left(\sqrt[3]{-1}b^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}+(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{4/3}} + \frac{\left((-1)^{2/3}b^{2/3}\right)\int \frac{\log(c+dx)}{\sqrt[3]{a}-\sqrt[3]{-1}\sqrt[3]{b}x}\,d\cdots}{3a^{4/3}}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \frac{\sqrt[3]{-1}\sqrt[3]{b}\log\left(\frac{d\left(\sqrt[3]{a}-\cdots\right)}{\sqrt[3]{-1}\cdots}\right)\cdots}{3\cdots}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \frac{\sqrt[3]{-1}\sqrt[3]{b}\log\left(\frac{d\left(\sqrt[3]{a}-\cdots\right)}{\sqrt[3]{-1}\cdots}\right)\cdots}{3\cdots}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[3]{b}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{4/3}} - \frac{\sqrt[3]{-1}\sqrt[3]{b}\log\left(\frac{d\left(\sqrt[3]{a}-\cdots\right)}{\sqrt[3]{-1}\cdots}\right)\cdots}{3\cdots}$$

Mathematica [A] time = 0.136782, size = 378, normalized size = 0.95

$$\frac{\sqrt[3]{b}cx\,\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + (-1)^{2/3}\sqrt[3]{b}cx\,\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - \sqrt[3]{-1}\sqrt[3]{b}cx\,\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right) + \sqrt[3]{b}cx\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^2*(a + b*x^3)),x]
```

```
[Out] (3*a^(1/3)*d*x*Log[x] - 3*a^(1/3)*c*Log[c + d*x] - 3*a^(1/3)*d*x*Log[c + d*
x] + b^(1/3)*c*x*Log[(d*(a^(1/3) + b^(1/3)*x))/(-(b^(1/3)*c) + a^(1/3)*d)]*
```

```
Log[c + d*x] - (-1)^(1/3)*b^(1/3)*c*x*Log[(d*(a^(1/3) - (-1)^(1/3)*b^(1/3)*
x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x] + (-1)^(2/3)*b^(1/3)*c
*x*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(2/3)*b^(1/3)*c) + a^(1
/3)*d)]*Log[c + d*x] + b^(1/3)*c*x*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*
c - a^(1/3)*d)] + (-1)^(2/3)*b^(1/3)*c*x*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c
+ d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] - (-1)^(1/3)*b^(1/3)*c*x*PolyLo
g[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3
*a^(4/3)*c*x)
```

Maple [C] time = 0.41, size = 128, normalized size = 0.3

$$-\frac{d}{3a}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Z\,bc^2+ad^3-bc^3\right)}\frac{1}{\_R1-c}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)+\frac{d\ln(}{ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^2/(b*x^3+a),x)
```

```
[Out] -1/3*d/a*sum(1/(_R1-c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_
R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))+d/a/c*ln(d*x)-d*
ln(d*x+c)/a/c-ln(d*x+c)/a/x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log(dx+c)}{bx^5+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^5 + a*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**2/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^3+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^2), x)
```

3.292 $\int \frac{\log(c+dx)}{x^3(a+bx^3)}\,dx$

Optimal. Leaf size=423

$$-\frac{b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}+\frac{\sqrt[3]{-1}b^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{5/3}}-\frac{b^{2/3}\log(c+}{}$$

```
[Out] -d/(2*a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Log[
c + d*x]/(2*a*x^2) - (b^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c -
a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*Log[(d*(a^(1/3
) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x]
)/(3*a^(5/3)) + ((-1)^(1/3)*b^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*
x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - (b^(2/
3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) + (
(-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^
(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*PolyLog[2, ((-1)^(
1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(5/3))
```

Rubi [A] time = 0.437609, antiderivative size = 423, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {325, 200, 31, 634, 617, 204, 628, 2416, 2395, 44, 2409, 2394, 2393, 2391}

$$-\frac{b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}+\frac{\sqrt[3]{-1}b^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right)}{3a^{5/3}}-\frac{(-1)^{2/3}b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right)}{3a^{5/3}}-\frac{b^{2/3}\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^3*(a + b*x^3)),x]
```

```
[Out] -d/(2*a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Log[
c + d*x]/(2*a*x^2) - (b^(2/3)*Log[-((d*(a^(1/3) + b^(1/3)*x))/(b^(1/3)*c -
a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*Log[(d*(a^(1/3
) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x]
)/(3*a^(5/3)) + ((-1)^(1/3)*b^(2/3)*Log[-((d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*
x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d))]*Log[c + d*x])/(3*a^(5/3)) - (b^(2/
3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) + (
(-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*(c + d*x))/((-1)^(2/3)*b^
(1/3)*c - a^(1/3)*d)])/(3*a^(5/3)) - ((-1)^(2/3)*b^(2/3)*PolyLog[2, ((-1)^(
1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(3*a^(5/3))
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 200

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
```

```
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
reeQ[{a, b}, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^3\left(a+bx^3\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^3} - \frac{b\log(c+dx)}{a\left(a+bx^3\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^3}\,dx}{a} - \frac{b\int \frac{\log(c+dx)}{a+bx^3}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b\int\left(-\frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-\sqrt[3]{b}x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x\right)} - \frac{\log(c+dx)}{3a^{2/3}\left(-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x\right)}\right)dx}{a} + \frac{d\int \frac{1}{x^2(c+dx)}\,d\cdots}{2a}$$

$$= -\frac{\log(c+dx)}{2ax^2} + \frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}-\sqrt[3]{b}x}\,dx}{3a^{5/3}} + \frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}+\sqrt[3]{-1}\sqrt[3]{b}x}\,dx}{3a^{5/3}} + \frac{b\int \frac{\log(c+dx)}{-\sqrt[3]{a}-(-1)^{2/3}\sqrt[3]{b}x}\,dx}{3a^{5/3}} + \frac{d\int\left(\frac{1}{cx^2} - \frac{d}{c^2x} + \cdots\right.}{2a}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{5/3}} - \frac{(-1)^{2/3}b^{2/\cdots}}{\cdots}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{5/3}} - \frac{(-1)^{2/3}b^{2/\cdots}}{\cdots}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{b^{2/3}\log\left(-\frac{d\left(\sqrt[3]{a}+\sqrt[3]{b}x\right)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right)\log(c+dx)}{3a^{5/3}} - \frac{(-1)^{2/3}b^{2/\cdots}}{\cdots}$$

Mathematica [A] time = 0.22208, size = 371, normalized size = 0.88

$$\frac{-2b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{b}(c+dx)}{\sqrt[3]{b}c-\sqrt[3]{a}d}\right) + 2\sqrt[3]{-1}b^{2/3}\text{PolyLog}\left(2,\frac{(-1)^{2/3}\sqrt[3]{b}(c+dx)}{(-1)^{2/3}\sqrt[3]{b}c-\sqrt[3]{a}d}\right) - 2(-1)^{2/3}b^{2/3}\text{PolyLog}\left(2,\frac{\sqrt[3]{-1}\sqrt[3]{b}(c+dx)}{\sqrt[3]{a}d+\sqrt[3]{-1}\sqrt[3]{b}c}\right) - \frac{3a^{2/3}d(-dx\cdots}{\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^3*(a + b*x^3)),x]
```

```
[Out] ((-3*a^(2/3)*Log[c + d*x])/x^2 - 2*b^(2/3)*Log[(d*(a^(1/3) + b^(1/3)*x))/(-
(b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - 2*(-1)^(2/3)*b^(2/3)*Log[(d*(a^(1/
3) - (-1)^(1/3)*b^(1/3)*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)]*Log[c + d*x
] + 2*(-1)^(1/3)*b^(2/3)*Log[(d*(a^(1/3) + (-1)^(2/3)*b^(1/3)*x))/(-((-1)^(
2/3)*b^(1/3)*c) + a^(1/3)*d)]*Log[c + d*x] - (3*a^(2/3)*d*(c + d*x*Log[x] -
 d*x*Log[c + d*x]))/(c^2*x) - 2*b^(2/3)*PolyLog[2, (b^(1/3)*(c + d*x))/(b^(
1/3)*c - a^(1/3)*d)] + 2*(-1)^(1/3)*b^(2/3)*PolyLog[2, ((-1)^(2/3)*b^(1/3)*
(c + d*x))/((-1)^(2/3)*b^(1/3)*c - a^(1/3)*d)] - 2*(-1)^(2/3)*b^(2/3)*PolyL
og[2, ((-1)^(1/3)*b^(1/3)*(c + d*x))/((-1)^(1/3)*b^(1/3)*c + a^(1/3)*d)])/(
6*a^(5/3))
```

Maple [C] time = 0.433, size = 153, normalized size = 0.4

$$-\frac{d^2}{3a}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^3-3\_Z^2bc+3\_Zbc^2+ad^3-bc^3\right)}\frac{1}{\_R1^2-2\_R1c+c^2}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R}{\_R1}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^3/(b*x^3+a),x)
```

```
[Out] -1/3*d^2/a*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog(
(-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^3*b-3*_Z^2*b*c+3*_Z*b*c^2+a*d^3-b*c^3))-1/
2*d^2/a/c^2*ln(d*x)-1/2*d/a/c/x+1/2*d^2*ln(d*x+c)/c^2/a-1/2*ln(d*x+c)/a/x^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log(dx+c)}{bx^6+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^6 + a*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**3/(b*x**3+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^3+a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^3+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^3 + a)*x^3), x)
```

3.293 $\int \frac{x^7 \log(c+dx)}{a+bx^4} dx$

Optimal. Leaf size=498

$$-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b^2}-$$

```
[Out] (c^3*x)/(4*b*d^3) - (c^2*x^2)/(8*b*d^2) + (c*x^3)/(12*b*d) - x^4/(16*b) - (
c^4*Log[c + d*x])/(4*b*d^4) + (x^4*Log[c + d*x])/(4*b) - (a*Log[(d*(Sqrt[-S
qrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^
2) - (a*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x])/(4*b^2) - (a*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - S
qrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^2) - (a*Log[-((d*((-a)^(1/4) + b^(1/
4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^2) - (a*PolyLog[2, (
b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLog[2
, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b^2) - (a*PolyLog[
2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*b^2)
```

Rubi [A] time = 0.810366, antiderivative size = 498, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421, Rules used = {266, 43, 2416, 2395, 260, 2394, 2393, 2391}

$$-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b^2}-\frac{a\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^7*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (c^3*x)/(4*b*d^3) - (c^2*x^2)/(8*b*d^2) + (c*x^3)/(12*b*d) - x^4/(16*b) - (
c^4*Log[c + d*x])/(4*b*d^4) + (x^4*Log[c + d*x])/(4*b) - (a*Log[(d*(Sqrt[-S
qrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^
2) - (a*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x])/(4*b^2) - (a*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - S
qrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^2) - (a*Log[-((d*((-a)^(1/4) + b^(1/
4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^2) - (a*PolyLog[2, (
b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLog[2
, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^2) - (a*PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b^2) - (a*PolyLog[
2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*b^2)
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^7 \log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x^3 \log(c+dx)}{b} - \frac{ax^3 \log(c+dx)}{b\left(a+bx^4\right)}\right) dx$$
$$= \frac{\int x^3 \log(c+dx)\,dx}{b} - \frac{a\int \frac{x^3 \log(c+dx)}{a+bx^4}\,dx}{b}$$
$$= \frac{x^4 \log(c+dx)}{4b} - \frac{a\int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\sqrt{b}+bx^2\right)} + \frac{x\log(c+dx)}{2\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right) dx}{b} - \frac{d\int \frac{x^4}{c+dx}\,dx}{4b}$$
$$= \frac{x^4 \log(c+dx)}{4b} - \frac{a\int \frac{x\log(c+dx)}{-\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2b} - \frac{a\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2b} - \frac{d\int \left(-\frac{c^3}{d^4} + \frac{c^2x}{d^3} - \frac{cx^2}{d^2} + \frac{x^3}{d} + \frac{c^4}{d^4(c+dx)}\right)}{4b}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{}{2b^{3/4}}\right.}{2b}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} + \frac{a\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4b^{7/4}} + \frac{a\int \frac{\log(c}{\sqrt[4]{-a}-}}{4b^7}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+}{4b^2}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+}{4b^2}$$
$$= \frac{c^3x}{4bd^3} - \frac{c^2x^2}{8bd^2} + \frac{cx^3}{12bd} - \frac{x^4}{16b} - \frac{c^4\log(c+dx)}{4bd^4} + \frac{x^4\log(c+dx)}{4b} - \frac{a\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+}{4b^2}$$

Mathematica [C] time = 0.321199, size = 446, normalized size = 0.9

$$-\frac{12ad^4\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)+12ad^4\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)+12ad^4\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)+12ad^4\text{PolyLog}\left(2,\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^7*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -(-12*b*c^3*d*x + 6*b*c^2*d^2*x^2 - 4*b*c*d^3*x^3 + 3*b*d^4*x^4 + 12*b*c^4*
Log[c + d*x] - 12*b*d^4*x^4*Log[c + d*x] + 12*a*d^4*Log[(d*((-a)^(1/4) - b^
(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] + 12*a*d^4*Log[(d*((-a)^
(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] + 12*a*d^4
*Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x] + 12*a*d^4*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/
4)*d)]*Log[c + d*x] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
(-a)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a
)^(1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(
1/4)*d)] + 12*a*d^4*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*
d)])/(48*b^2*d^4)
```

Maple [C] time = 0.385, size = 175, normalized size = 0.4

$$\frac{x^4 \ln(dx+c)}{4b} - \frac{c^4 \ln(dx+c)}{4bd^4} - \frac{x^4}{16b} + \frac{cx^3}{12bd} - \frac{c^2x^2}{8bd^2} + \frac{c^3x}{4bd^3} + \frac{25c^4}{48bd^4} - \frac{a}{4b^2} \sum_{\_R1=\mathrm{RootOf}(b\_Z^4-4bc\_Z^3+6c^2b\_Z^2-4bc^3\_Z+ad^4+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/4*x^4*ln(d*x+c)/b-1/4*c^4*ln(d*x+c)/b/d^4-1/16*x^4/b+1/12*c*x^3/b/d-1/8*c
^2*x^2/b/d^2+1/4/b/d^3*c^3*x+25/48/b/d^4*c^4-1/4*a/b^2*sum(ln(d*x+c)*ln((-d
*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*
b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^7 \log(dx+c)}{bx^4+a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x^7*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^7 \log(dx+c)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^7*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^7 \log(dx+c)}{bx^4+a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^7*log(d*x + c)/(b*x^4 + a), x)
```

3.294 $\int \frac{x^3 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=401

$$\frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b} + \frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b} + \frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b} + \frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b} + \frac{\log(c + \ldots}{}$$

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b) + (Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/
4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b
^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b
^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1
/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*b)
```

Rubi [A] time = 0.460136, antiderivative size = 401, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {260, 2416, 2394, 2393, 2391}

$$\frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b} + \frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b} + \frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b} + \frac{\text{PolyLog}\left(2, \frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b} + \frac{\log(c + \ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[c + d*x])/(a + b*x^4),x]
```


```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b) + (Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/
4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b
^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b
^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1
/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*b) + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*b)
```


Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\sqrt{b}+bx^2\right)}+\frac{x\log(c+dx)}{2\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx$$

$$=\frac{1}{2}\int \frac{x\log(c+dx)}{-\sqrt{-a}\sqrt{b}+bx^2}\,dx+\frac{1}{2}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx$$

$$=\frac{1}{2}\int\left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}+\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx+\frac{1}{2}\int\left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}+\right.$$

$$=-\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4b^{3/4}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4b^{3/4}}+\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}\,dx}{4b^{3/4}}+\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}x}\,dx}{4b^{3/4}}$$

$$=\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c\cdots}{4b}$$

$$=\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c\cdots}{4b}$$

$$=\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4b}+\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c\cdots}{4b}$$

Mathematica [C] time = 0.0613948, size = 383, normalized size = 0.96

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4b}+\frac{\log(c+\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d
*x])/(4*b) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*
Log[c + d*x])/(4*b) + (Log[-((d*(I*(-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*
(-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b) + PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b
^(1/4)*c - I*(-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c + I*(-a)^(1/4)*d)]/(4*b) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)]/(4*b)
```

Maple [C] time = 0.378, size = 85, normalized size = 0.2

$$\frac{1}{4b}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z\,bc^3+ad^4+bc^4\right)}\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/4/b*sum(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf
(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3\log\left(dx+c\right)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^4 + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^3\log\left(dx+c\right)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 \log(dx + c)}{bx^4 + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(d*x + c)/(b*x^4 + a), x)
```

3.295 $\int \frac{\log(c+dx)}{x(a+bx^4)}\,dx$

Optimal. Leaf size=433

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4a}+\text{PolyLo}$$

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(
b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(S
qrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x]
)/(4*a) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*
Log[c + d*x])/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqr
t[-a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/
(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*a) +
PolyLog[2, 1 + (d*x)/c]/a
```

Rubi [A] time = 0.594585, antiderivative size = 433, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {266, 36, 29, 31, 2416, 2394, 2315, 260, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4a}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4a}+\text{PolyLo}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x*(a + b*x^4)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(
b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(S
qrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x]
)/(4*a) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*
Log[c + d*x])/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqr
t[-a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/
(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*a) +
PolyLog[2, 1 + (d*x)/c]/a
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x\left(a+bx^4\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax} - \frac{bx^3\log(c+dx)}{a\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x}\,dx}{a} - \frac{b\int \frac{x^3\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{b\int \left(\frac{x\log(c+dx)}{2\left(-\sqrt{-a}\sqrt{b}+bx^2\right)} + \frac{x\log(c+dx)}{2\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx}{a} - \frac{d\int \frac{\log\left(-\frac{dx}{c}\right)}{c+dx}\,dx}{a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{b\int \frac{x\log(c+dx)}{-\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2a} - \frac{b\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} - \frac{b\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx}{2a} - \frac{b\int \left(-\frac{\text{l}}{2b^{3/4}}\right.}{}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} + \frac{\text{Li}_2\left(1+\frac{dx}{c}\right)}{a} + \frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4a} + \frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4a} - \frac{\sqrt[4]{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}}{4a}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a} - \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4a} - \frac{\log\left(-\frac{d(}{}\right.}{}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a} - \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4a} - \frac{\log\left(-\frac{d(}{}\right.}{}$$

$$= \frac{\log\left(-\frac{dx}{c}\right)\log(c+dx)}{a} - \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4a} - \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4a} - \frac{\log\left(-\frac{d(}{}\right.}{}$$

Mathematica [C] time = 0.102083, size = 416, normalized size = 0.96

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4a} - \frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)}{4a} - \frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)}{4a} - \frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4a} + \frac{\text{PolyLog}(}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x*(a + b*x^4)),x]
```

```
[Out] (Log[-((d*x)/c)]*Log[c + d*x])/a - (Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(
1/4)*c + I*(-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[(d*((-a)^(1/4) - b^(1/
4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*a) - (Log[-((d*(I*(-a)^
(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*(-a)^(1/4)*d))]*Log[c + d*x])/(4*a) - (L
og[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x]
)/(4*a) + PolyLog[2, (c + d*x)/c]/a - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/
4)*c - (-a)^(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I
*(-a)^(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^
(1/4)*d)]/(4*a) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)
]/(4*a)
```

Maple [C] time = 0.394, size = 116, normalized size = 0.3

$$\frac{\ln(dx+c)}{a}\ln\left(-\frac{dx}{c}\right)+\frac{1}{a}\mathrm{dilog}\left(-\frac{dx}{c}\right)-\frac{1}{4a}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z\,bc^3+ad^4+bc^4\right)}\ln(dx+c)\ln\left(\frac{-dx+\_R1-}{\_R1}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x/(b*x^4+a),x)
```

```
[Out] ln(-d*x/c)*ln(d*x+c)/a+1/a*dilog(-d*x/c)-1/4/a*sum(ln(d*x+c)*ln((-d*x+_R1-c
)/_R1)+dilog((-d*x+_R1-c)/_R1),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*
_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log(dx+c)}{(bx^4+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log(dx+c)}{bx^5+ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^5 + a*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log(dx+c)}{(bx^4+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x), x)
```

3.296 $\int \frac{x^5 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=530

$$-\frac{\sqrt{-a}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\text{PolyLog}\left(2\right.}{4b^{3/2}}$$

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) - (Sqrt[-a]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqr
t[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[
-a]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)
)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[-a]*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(3/2)) - (Sq
rt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*
b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)
*d)])/(4*b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)])/(4*b^(3/2))
```

Rubi [A] time = 0.647887, antiderivative size = 530, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {275, 321, 205, 2416, 2395, 43, 260, 2394, 2393, 2391}

$$-\frac{\sqrt{-a}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b^{3/2}}-\frac{\sqrt{-a}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b^{3/2}}+\frac{\sqrt{-a}\text{PolyLog}\left(2\right.}{4b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (c*x)/(2*b*d) - x^2/(4*b) - (c^2*Log[c + d*x])/(2*b*d^2) + (x^2*Log[c + d*x
])/(2*b) - (Sqrt[-a]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqr
t[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[(d*((-a)^(1/4) -
 b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[
-a]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)
)]*Log[c + d*x])/(4*b^(3/2)) + (Sqrt[-a]*Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*b^(3/2)) - (Sqrt[-a]*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(3/2)) - (Sq
rt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*
b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)
*d)])/(4*b^(3/2)) + (Sqrt[-a]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (
-a)^(1/4)*d)])/(4*b^(3/2))
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^5 \log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{x\log(c+dx)}{b} - \frac{ax\log(c+dx)}{b\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int x\log(c+dx)\,dx}{b} - \frac{a\int \frac{x\log(c+dx)}{a+bx^4}\,dx}{b}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{a\int \left(-\frac{\sqrt{b}x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx}{b} - \frac{d\int \frac{x^2}{c+dx}\,dx}{2b}$$

$$= \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}-bx^2}\,dx}{2\sqrt{b}} - \frac{\sqrt{-a}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2\sqrt{b}} - \frac{d\int \left(-\frac{c}{d^2}+\frac{x}{d}+\frac{c^2}{d^2(c+dx)}\right)dx}{2b}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)}{2\sqrt{b}}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} + \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4b^{5/4}} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4b^{5/4}} - $$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{3/2}} + \frac{\sqrt{-a}\log}{}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{3/2}} + \frac{\sqrt{-a}\log}{}$$

$$= \frac{cx}{2bd} - \frac{x^2}{4b} - \frac{c^2\log(c+dx)}{2bd^2} + \frac{x^2\log(c+dx)}{2b} - \frac{\sqrt{-a}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{3/2}} + \frac{\sqrt{-a}\log}{}$$

Mathematica [C] time = 0.221593, size = 484, normalized size = 0.91

$$\frac{\sqrt{-a}d^2\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right) - \sqrt{-a}d^2\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right) - \sqrt{-a}d^2\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right) + \sqrt{-a}d^2\text{PolyLog}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (2*Sqrt[b]*c*d*x - Sqrt[b]*d^2*x^2 - 2*Sqrt[b]*c^2*Log[c + d*x] + 2*Sqrt[b]
*d^2*x^2*Log[c + d*x] + Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1
/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) - I*b
^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - Sqrt[-a]*d^2*Log[(d
*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
+ Sqrt[-a]*d^2*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*
d)]*Log[c + d*x] + Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
 (-a)^(1/4)*d)] - Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c -
I*(-a)^(1/4)*d)] - Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c +
 I*(-a)^(1/4)*d)] + Sqrt[-a]*d^2*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c
+ (-a)^(1/4)*d)])/(4*b^(3/2)*d^2)
```

Maple [C] time = 0.376, size = 164, normalized size = 0.3

$$\frac{x^2\ln(dx+c)}{2b}-\frac{c^2\ln(dx+c)}{2bd^2}-\frac{x^2}{4b}+\frac{cx}{2bd}+\frac{3c^2}{4bd^2}-\frac{ad^2}{4b^2}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z bc^3+ad^4+bc^4\right)}\frac{1}{\_R1^2-2\_R1c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/2*x^2*ln(d*x+c)/b-1/2*c^2*ln(d*x+c)/b/d^2-1/4*x^2/b+1/2/b/d*c*x+3/4*c^2/b
/d^2-1/4*d^2*a/b^2*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1
)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b
*c^3+a*d^4+b*c^4))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^5\log(dx+c)}{bx^4+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^5*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^5\log(dx+c)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^5*log(d*x + c)/(b*x^4 + a), x)
```

3.297 $\int \frac{x\log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=473

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4\sqrt{-a}\sqrt{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}-\log(c+$$

```
[Out] -(Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Lo
g[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/
4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - (Log[-((d*(Sqrt[
-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4
*Sqrt[-a]*Sqrt[b]) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^
(1/4)*d))]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(
1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) + Pol
yLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*Sqrt[-a]*Sqrt[b]
) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*Sqrt[-a]*
Sqrt[b])
```

Rubi [A] time = 0.472792, antiderivative size = 473, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.412, Rules used = {275, 205, 2416, 260, 2394, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4\sqrt{-a}\sqrt{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4\sqrt{-a}\sqrt{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4\sqrt{-a}\sqrt{b}}-\log(c+$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -(Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Lo
g[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/
4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - (Log[-((d*(Sqrt[
-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4
*Sqrt[-a]*Sqrt[b]) + (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^
(1/4)*d))]*Log[c + d*x])/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(1/4)*(c + d*
x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) - PolyLog[2, (b^(
1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-a]*Sqrt[b]) + Pol
yLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)]/(4*Sqrt[-a]*Sqrt[b]
) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*Sqrt[-a]*
Sqrt[b])
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x\log(c+dx)}{a+bx^4}\,dx = \int \left(-\frac{\sqrt{b}x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx$$

$$= -\frac{\sqrt{b}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}-bx^2}\,dx}{2\sqrt{-a}} - \frac{\sqrt{b}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2\sqrt{-a}}$$

$$= -\frac{\sqrt{b}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx}{2\sqrt{-a}} - \frac{\sqrt{b}\int \left(\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)} - \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt[4]{-a}+\sqrt[4]{b}x\right)}\right)dx}{2\sqrt{-a}}$$

$$= \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4\sqrt{-a}\sqrt[4]{b}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4\sqrt{-a}\sqrt[4]{b}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}\,dx}{4\sqrt{-a}\sqrt[4]{b}} + \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}x}\,dx}{4\sqrt{-a}\sqrt[4]{b}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\sqrt{-a}\sqrt{b}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\sqrt{-a}\sqrt{b}}$$

$$= -\frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4\sqrt{-a}\sqrt{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\sqrt{-a}\sqrt{b}}$$

Mathematica [C] time = 0.109611, size = 348, normalized size = 0.74

$$\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right) - \text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right) - \text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right) + \text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right) + \log(c+dx)\log}{4\sqrt{-a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
- Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c +
d*x] - Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*
Log[c + d*x] + Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*
d)]*Log[c + d*x] + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d
)] - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] - PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)] + PolyLog[2, (b^(1/4)
*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*Sqrt[-a]*Sqrt[b])
```

Maple [C] time = 0.371, size = 102, normalized size = 0.2

$$\frac{d^2}{4b}\sum_{\_R1=\text{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Zbc^3+ad^4+bc^4\right)}\frac{1}{\_R1^2-2\_R1c+c^2}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\text{dilog}\left(\frac{-dx+\_}{\_R}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/4*d^2/b*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((
-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^
4+b*c^4))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x\log\left(dx+c\right)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\log\left(dx+c\right)}{bx^4+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x*log(d*x + c)/(b*x^4 + a), x)
```

3.298 $\int \frac{\log(c+dx)}{x^3(a+bx^4)}\,dx$

Optimal. Leaf size=537

$$-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}\ldots}\right)}{4(-a)^{3/2}}$$

```
[Out] -d/(2*a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Log[
c + d*x]/(2*a*x^2) - (Sqrt[b]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4
)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*((
-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(
3/2)) - (Sqrt[b]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[
-Sqrt[-a]]*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1/4
) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) -
 (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/
(4*(-a)^(3/2)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[
-Sqrt[-a]]*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b
^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c
 + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/2))
```

Rubi [A] time = 0.650977, antiderivative size = 537, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {275, 325, 205, 2416, 2395, 44, 260, 2394, 2393, 2391}

$$-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4(-a)^{3/2}}-\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}\ldots}\right)}{4(-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^3*(a + b*x^4)),x]
```

```
[Out] -d/(2*a*c*x) - (d^2*Log[x])/(2*a*c^2) + (d^2*Log[c + d*x])/(2*a*c^2) - Log[
c + d*x]/(2*a*x^2) - (Sqrt[b]*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4
)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*((
-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(
3/2)) - (Sqrt[b]*Log[-((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[
-Sqrt[-a]]*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1/4
) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) -
 (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/
(4*(-a)^(3/2)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[
-Sqrt[-a]]*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b
^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c
 + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/2))
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
 + 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^3\left(a+bx^4\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^3} - \frac{bx\log(c+dx)}{a\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^3}\,dx}{a} - \frac{b\int \frac{x\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b\int \left(-\frac{\sqrt{b}x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}-bx^2\right)} - \frac{\sqrt{b}x\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-a}\sqrt{b}+bx^2\right)}\right)dx}{a} + \frac{d\int \frac{1}{x^2(c+dx)}\,dx}{2a}$$

$$= -\frac{\log(c+dx)}{2ax^2} - \frac{b^{3/2}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}-bx^2}\,dx}{2(-a)^{3/2}} - \frac{b^{3/2}\int \frac{x\log(c+dx)}{\sqrt{-a}\sqrt{b}+bx^2}\,dx}{2(-a)^{3/2}} + \frac{d\int \left(\frac{1}{cx^2} - \frac{d}{c^2x} + \frac{d^2}{c^2(c+dx)}\right)dx}{2a}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{b^{3/2}\int \left(-\frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\log(c+dx)}{2b^{3/4}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)}{2(-a)^{3/2}}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} + \frac{b^{3/4}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4(-a)^{3/2}} - \frac{b^{3/4}\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4(-a)^{3/2}} - \cdots$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4(-a)^{3/2}} + \frac{\sqrt{b}\log\left(\cdots\right.}{\cdots}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4(-a)^{3/2}} + \frac{\sqrt{b}\log\left(\cdots\right.}{\cdots}$$

$$= -\frac{d}{2acx} - \frac{d^2\log(x)}{2ac^2} + \frac{d^2\log(c+dx)}{2ac^2} - \frac{\log(c+dx)}{2ax^2} - \frac{\sqrt{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4(-a)^{3/2}} + \frac{\sqrt{b}\log\left(\cdots\right.}{\cdots}$$

Mathematica [C] time = 0.196353, size = 506, normalized size = 0.94

$$\frac{\sqrt{b}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}} - \frac{\sqrt{b}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}} - \frac{\sqrt{b}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)}{4(-a)^{3/2}} + \frac{\sqrt{b}\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4(-a)^{3/2}} - \cdots$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^3*(a + b*x^4)),x]
```

```
[Out] -Log[c + d*x]/(2*a*x^2) - (Sqrt[b]*Log[(d*(I*(-a)^(1/4) - b^(1/4)*x))/(b^(1
/4)*c + I*(-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[(d*((-
a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3
/2)) - (Sqrt[b]*Log[-((d*(I*(-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - I*(-a)^(1
/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) + (Sqrt[b]*Log[-((d*((-a)^(1/4) + b^(
1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/2)) - (d*(1/
(c*x) + (d*Log[x])/c^2 - (d*Log[c + d*x])/c^2))/(2*a) + (Sqrt[b]*PolyLog[2,
 (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(3/2)) - (Sqrt[b]
*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)])/(4*(-a)^(3/2
)) - (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)])
/(4*(-a)^(3/2)) + (Sqrt[b]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)
^(1/4)*d)])/(4*(-a)^(3/2))
```

Maple [C] time = 0.422, size = 161, normalized size = 0.3

$$-\frac{d^2}{4a}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z\,bc^3+ad^4+bc^4\right)}\frac{1}{\_R1^2-2\_R1\,c+c^2}\left(\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-d}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^3/(b*x^4+a),x)
```

```
[Out] -1/4*d^2/a*sum(1/(_R1^2-2*_R1*c+c^2)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog(
(-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d
^4+b*c^4))-1/2*d^2/a/c^2*ln(d*x)-1/2*d/a/c/x+1/2*d^2*ln(d*x+c)/c^2/a-1/2*ln
(d*x+c)/a/x^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log\left(dx+c\right)}{bx^7+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^7 + a*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**3/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log\left(dx+c\right)}{\left(bx^4+a\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^3/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^3), x)
```

3.299 $\int \frac{x^4 \log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=521

$$-\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b^{5/4}}-\frac{\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b^{5/4}}+\sqrt[4]{-a}\,\text{Poly}$$

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) + (Sqrt[-Sqrt[-a]]*Log[(d*(Sqrt[-Sq
rt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(
5/4)) + ((-a)^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*Log[-((d*(Sqrt[-Sqrt[-a]
] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^(5/4))
 - ((-a)^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d
))]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d
*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) + (Sqrt[-Sqrt[-a]]*PolyL
og[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) - (
(-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b
^(5/4)) + ((-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4
)*d)])/(4*b^(5/4))
```

Rubi [A] time = 0.755626, antiderivative size = 521, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.737, Rules used = {321, 211, 1165, 628, 1162, 617, 204, 2416, 2389, 2295, 2409, 2394, 2393, 2391}

$$-\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4b^{5/4}}+\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4b^{5/4}}-\frac{\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4b^{5/4}}+\sqrt[4]{-a}\,\text{Poly}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] -(x/b) + ((c + d*x)*Log[c + d*x])/(b*d) + (Sqrt[-Sqrt[-a]]*Log[(d*(Sqrt[-Sq
rt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(4*b^(
5/4)) + ((-a)^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4
)*d)]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*Log[-((d*(Sqrt[-Sqrt[-a]
] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c + d*x])/(4*b^(5/4))
 - ((-a)^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^(1/4)*c - (-a)^(1/4)*d
))]*Log[c + d*x])/(4*b^(5/4)) - (Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d
*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) + (Sqrt[-Sqrt[-a]]*PolyL
og[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(4*b^(5/4)) - (
(-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)])/(4*b
^(5/4)) + ((-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4
)*d)])/(4*b^(5/4))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^4\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{\log(c+dx)}{b} - \frac{a\log(c+dx)}{b\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \log(c+dx)\,dx}{b} - \frac{a\int \frac{\log(c+dx)}{a+bx^4}\,dx}{b}$$

$$= -\frac{a\int \left(\frac{\sqrt{-a}\log(c+dx)}{2a\left(\sqrt{-a}-\sqrt{b}x^2\right)} + \frac{\sqrt{-a}\log(c+dx)}{2a\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right)dx}{b} + \frac{\text{Subst}\left(\int \log(x)\,dx, x, c+dx\right)}{bd}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}\,dx}{2b} - \frac{\sqrt{-a}\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}\,dx}{2b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-a}\int \left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx}{2b} - \frac{\sqrt{-a}\int \left(\frac{\log(c}{2\sqrt[4]{-a}\left(\sqrt[4]{}\right.}\right.}{}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} - \frac{\sqrt{-\sqrt{-a}}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4b} - \frac{\sqrt{-\sqrt{-a}}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}\,dx}{4b} - \frac{\sqrt[4]{-a}\int \frac{\log(c+}{\sqrt[4]{-a}-}}{4b}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{5/4}} + \frac{\sqrt[4]{-a}\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log}{4b^{5/4}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{5/4}} + \frac{\sqrt[4]{-a}\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log}{4b^{5/4}}$$

$$= -\frac{x}{b} + \frac{(c+dx)\log(c+dx)}{bd} + \frac{\sqrt{-\sqrt{-a}}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4b^{5/4}} + \frac{\sqrt[4]{-a}\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log}{4b^{5/4}}$$

Mathematica [C] time = 0.235955, size = 458, normalized size = 0.88

$$-\sqrt[4]{-a}d\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right) - i\sqrt[4]{-a}d\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right) + i\sqrt[4]{-a}d\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right) + \sqrt[4]{-a}d\,\text{PolyLog}\left(2,\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (-4*b^(1/4)*d*x + 4*b^(1/4)*c*Log[c + d*x] + 4*b^(1/4)*d*x*Log[c + d*x] + (
-a)^(1/4)*d*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Lo
g[c + d*x] - I*(-a)^(1/4)*d*Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c
 + (-a)^(1/4)*d)]*Log[c + d*x] + I*(-a)^(1/4)*d*Log[(d*((-a)^(1/4) + I*b^(1
/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - (-a)^(1/4)*d*Log[(d
*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*d)]*Log[c + d*x] - (-
a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/4)*d)] - I*(
-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] +
I*(-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)]
 + (-a)^(1/4)*d*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])
/(4*b^(5/4)*d)
```

Maple [C] time = 0.385, size = 154, normalized size = 0.3

$$\frac{\ln\left(dx+c\right)x}{b}+\frac{\ln\left(dx+c\right)c}{bd}-\frac{x}{b}-\frac{c}{bd}-\frac{ad^{3}}{4b^{2}}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^{4}-4\_Z^{3}bc+6\_Z^{2}bc^{2}-4\_Z\,bc^{3}+ad^{4}+bc^{4}\right)}\frac{1}{\_R1^{3}-3\_R1^{2}c+3\_R1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/b*ln(d*x+c)*x+1/d/b*ln(d*x+c)*c-x/b-1/d/b*c-1/4*d^3*a/b^2*sum(1/(_R1^3-3*
_R1^2*c+3*_R1*c^2-c^3)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_
R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^{4}\log\left(dx+c\right)}{bx^{4}+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^4*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^{4}\log\left(dx+c\right)}{bx^{4}+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^4*log(d*x + c)/(b*x^4 + a), x)
```

3.300 $\int \frac{x^2 \log(c+dx)}{a+bx^4} \, dx$

Optimal. Leaf size=497

$$-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4\sqrt{-\sqrt{-a}}b^{3/4}}+\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4\sqrt{-\sqrt{-a}}b^{3/4}}-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4\sqrt[4]{-a}b^{3/4}}+\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4\sqrt[4]{-a}b^{3/4}}+\frac{\log}{}$$

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - (Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^
(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - PolyLog[2,
 (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-Sqrt[-a]]*b^
(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4
*Sqrt[-Sqrt[-a]]*b^(3/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a
)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4
)*c + (-a)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4))
```

Rubi [A] time = 0.540614, antiderivative size = 497, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 11, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.579, Rules used = {297, 1162, 617, 204, 1165, 628, 2416, 2409, 2394, 2393, 2391}

$$-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4\sqrt{-\sqrt{-a}}b^{3/4}}+\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4\sqrt{-\sqrt{-a}}b^{3/4}}-\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4\sqrt[4]{-a}b^{3/4}}+\frac{\mathrm{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4\sqrt[4]{-a}b^{3/4}}+\frac{\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - (Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*Sqrt[-Sqrt[-a]]*b^(3/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(b^
(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(1/4)*b^(3/4)) - PolyLog[2,
 (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*Sqrt[-Sqrt[-a]]*b^
(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]/(4
*Sqrt[-Sqrt[-a]]*b^(3/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a
)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4
)*c + (-a)^(1/4)*d)]/(4*(-a)^(1/4)*b^(3/4))
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^2 \log(c+dx)}{a+bx^4}\,dx = \int \left(-\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}-\sqrt{b}x^2\right)}+\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}\,dx}{2\sqrt{b}}+\frac{\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}\,dx}{2\sqrt{b}}$$

$$= \frac{\int \left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}+\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx}{2\sqrt{b}}-\frac{\int \left(\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}+\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}+\sqrt[4]{b}x\right)}\right)dx}{2\sqrt{b}}$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4\sqrt{-\sqrt{-a}}\sqrt{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}\,dx}{4\sqrt{-\sqrt{-a}}\sqrt{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4\sqrt[4]{-a}\sqrt{b}}-\frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}x}\,dx}{4\sqrt[4]{-a}\sqrt{b}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4\sqrt[4]{-a}b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+}{4\sqrt{-\sqrt{-a}}b^{3/4}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4\sqrt[4]{-a}b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+}{4\sqrt{-\sqrt{-a}}b^{3/4}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\sqrt{-\sqrt{-a}}b^{3/4}}+\frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4\sqrt[4]{-a}b^{3/4}}-\frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+}{4\sqrt{-\sqrt{-a}}b^{3/4}}$$

Mathematica [A] time = 0.276237, size = 464, normalized size = 0.93

$$-\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)+\sqrt[4]{-a}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)-\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)+\sqrt{-\sqrt{-a}}\,\text{PolyL}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[c + d*x])/(a + b*x^4),x]
```

```
[Out] ((-a)^(1/4)*Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-
a]]*d)]*Log[c + d*x] + Sqrt[-Sqrt[-a]]*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x] - (-a)^(1/4)*Log[(d*(Sqrt[-Sqrt[-a]]
+ b^(1/4)*x))/(-(b^(1/4)*c) + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x] - Sqrt[-Sqrt
```

```
[-a]]*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1/4)*d)]*Log[c
 + d*x] - (-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt
[-a]]*d)] + (-a)^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sq
rt[-a]]*d)] - Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (
-a)^(1/4)*d)] + Sqrt[-Sqrt[-a]]*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c +
 (-a)^(1/4)*d)])/(4*Sqrt[-Sqrt[-a]]*(-a)^(1/4)*b^(3/4))
```

Maple [C] time = 0.385, size = 94, normalized size = 0.2

$$\frac{d}{4b}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z\,bc^3+ad^4+bc^4\right)}\frac{1}{\_R1-c}\left(\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/4*d/b*sum(1/(_R1-c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_R
1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^2\log\left(dx+c\right)}{bx^4+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 \log(dx + c)}{bx^4 + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(x^2*log(d*x + c)/(b*x^4 + a), x)
```

3.301 $\int \frac{\log(c+dx)}{a+bx^4}\,dx$

Optimal. Leaf size=497

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\log(c+}{}$$

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x)
)/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - (Log[-
((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c
+ d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*(-Sqrt[-a])^(3
/2)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*
d)]/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c - (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))
/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4))
```

Rubi [A] time = 0.415627, antiderivative size = 497, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2409, 2394, 2393, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}-\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)}{4(-a)^{3/4}\sqrt[4]{b}}+\frac{\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(a + b*x^4),x]
```

```
[Out] (Log[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log
[c + d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) + (Log[(d*((-a)^(1/4) - b^(1/4)*x)
)/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - (Log[-
((d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c
+ d*x])/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - (Log[-((d*((-a)^(1/4) + b^(1/4)*x))
/(b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(3/4)*b^(1/4)) - PolyLo
g[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)]/(4*(-Sqrt[-a])^(3
/2)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*
d)]/(4*(-Sqrt[-a])^(3/2)*b^(1/4)) - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)
*c - (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4)) + PolyLog[2, (b^(1/4)*(c + d*x))
/(b^(1/4)*c + (-a)^(1/4)*d)]/(4*(-a)^(3/4)*b^(1/4))
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{a+bx^4}\,dx = \int \left(\frac{\sqrt{-a}\log(c+dx)}{2a\left(\sqrt{-a}-\sqrt{b}x^2\right)}+\frac{\sqrt{-a}\log(c+dx)}{2a\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right)dx$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}\,dx}{2\sqrt{-a}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}\,dx}{2\sqrt{-a}}$$

$$= -\frac{\int \left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}+\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx}{2\sqrt{-a}} - \frac{\int \left(\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}+\frac{\log(c+dx)}{2\sqrt[4]{-a}\left(\sqrt[4]{-a}+\sqrt[4]{b}x\right)}\right)dx}{2\sqrt{-a}}$$

$$= -\frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4\left(-\sqrt{-a}\right)^{3/2}} - \frac{\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}\,dx}{4\left(-\sqrt{-a}\right)^{3/2}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}-\sqrt[4]{b}x}\,dx}{4(-a)^{3/4}} - \frac{\int \frac{\log(c+dx)}{\sqrt[4]{-a}+\sqrt[4]{b}x}\,dx}{4(-a)^{3/4}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}$$

$$= \frac{\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}} + \frac{\log\left(\frac{d\left(\sqrt[4]{-a}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt[4]{-a}d}\right)\log(c+dx)}{4(-a)^{3/4}\sqrt[4]{b}} - \frac{\log\left(-\frac{d\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)\log(c+d}{4\left(-\sqrt{-a}\right)^{3/2}\sqrt[4]{b}}$$

Mathematica [C] time = 0.104819, size = 359, normalized size = 0.72

$$\frac{-\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)-i\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-i\sqrt[4]{-a}d}\right)+i\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c+i\sqrt[4]{-a}d}\right)+\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}d+\sqrt[4]{b}c}\right)+\log(c+}{4(-a)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(a + b*x^4),x]
```

```
[Out] (Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x]
- I*Log[(d*((-a)^(1/4) - I*b^(1/4)*x))/(I*b^(1/4)*c + (-a)^(1/4)*d)]*Log[c
+ d*x] + I*Log[(d*((-a)^(1/4) + I*b^(1/4)*x))/((-I)*b^(1/4)*c + (-a)^(1/4)*
d)]*Log[c + d*x] - Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)*c) + (-a)^(1
/4)*d)]*Log[c + d*x] - PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^(1/
4)*d)] - I*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - I*(-a)^(1/4)*d)] + I
*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + I*(-a)^(1/4)*d)] + PolyLog[2,
(b^(1/4)*(c + d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(3/4)*b^(1/4))
```

Maple [C] time = 0.38, size = 112, normalized size = 0.2

$$\frac{d^3}{4b} \sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z\,bc^3+ad^4+bc^4\right)} \frac{1}{\_R1^3-3\_R1^2c+3\_R1\,c^2-c^3}\left(\ln(dx+c)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dil}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/(b*x^4+a),x)
```

```
[Out] 1/4*d^3/b*sum(1/(_R1^3-3*_R1^2*c+3*_R1*c^2-c^3)*(ln(d*x+c)*ln((-d*x+_R1-c)/
_R1)+dilog((-d*x+_R1-c)/_R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_
Z*b*c^3+a*d^4+b*c^4))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log(dx+c)}{bx^4+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^4 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log (dx + c)}{bx^4 + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/(b*x^4 + a), x)
```

3.302 $\int \frac{\log(c+dx)}{x^2\left(a+bx^4\right)}\,dx$

Optimal. Leaf size=536

$$-\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4(-a)^{5/4}}$$

```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/4)*L
og[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
 + d*x])/(4*(-Sqrt[-a])^(5/2)) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*(-Sqrt[-a])^(5
/2)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]
*d)])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1
/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(5/4)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(5/4))
```

Rubi [A] time = 0.816492, antiderivative size = 536, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 16, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.842, Rules used = {325, 297, 1162, 617, 204, 1165, 628, 2416, 2395, 36, 29, 31, 2409, 2394, 2393, 2391}

$$-\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}\,d}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}\,d+\sqrt[4]{b}c}\right)}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}\,d}\right)}{4(-a)^{5/4}}+\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{-a}\,d+\sqrt[4]{b}c}\right)}{4(-a)^{5/4}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c + d*x]/(x^2*(a + b*x^4)),x]
```


```
[Out] (d*Log[x])/(a*c) - (d*Log[c + d*x])/(a*c) - Log[c + d*x]/(a*x) + (b^(1/4)*L
og[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
 + d*x])/(4*(-Sqrt[-a])^(5/2)) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/
(b^(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*Log[-((
d*(Sqrt[-Sqrt[-a]] + b^(1/4)*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d))]*Log[c +
d*x])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*Log[-((d*((-a)^(1/4) + b^(1/4)*x))/(
b^(1/4)*c - (-a)^(1/4)*d))]*Log[c + d*x])/(4*(-a)^(5/4)) - (b^(1/4)*PolyLog
[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(4*(-Sqrt[-a])^(5
/2)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]
*d)])/(4*(-Sqrt[-a])^(5/2)) - (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1
/4)*c - (-a)^(1/4)*d)])/(4*(-a)^(5/4)) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c +
d*x))/(b^(1/4)*c + (-a)^(1/4)*d)])/(4*(-a)^(5/4))
```


Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
```

```
x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c+dx)}{x^2\left(a+bx^4\right)}\,dx = \int \left(\frac{\log(c+dx)}{ax^2} - \frac{bx^2\log(c+dx)}{a\left(a+bx^4\right)}\right)dx$$

$$= \frac{\int \frac{\log(c+dx)}{x^2}\,dx}{a} - \frac{b\int \frac{x^2\log(c+dx)}{a+bx^4}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} - \frac{b\int \left(-\frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}-\sqrt{b}x^2\right)} + \frac{\log(c+dx)}{2\sqrt{b}\left(\sqrt{-a}+\sqrt{b}x^2\right)}\right)dx}{a} + \frac{d\int \frac{1}{x(c+dx)}\,dx}{a}$$

$$= -\frac{\log(c+dx)}{ax} + \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-a}-\sqrt{b}x^2}\,dx}{2a} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-a}+\sqrt{b}x^2}\,dx}{2a} + \frac{d\int \frac{1}{x}\,dx}{ac} - \frac{d^2\int \frac{1}{c+dx}\,dx}{ac}$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} - \frac{\sqrt{b}\int \left(\frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)} + \frac{\sqrt{-\sqrt{-a}}\log(c+dx)}{2\sqrt{-a}\left(\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x\right)}\right)dx}{2a} + \cdots$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x}\,dx}{4\left(-\sqrt{-a}\right)^{5/2}} - \frac{\sqrt{b}\int \frac{\log(c+dx)}{\sqrt{-\sqrt{-a}}+\sqrt[4]{b}x}\,dx}{4\left(-\sqrt{-a}\right)^{5/2}} - \cdots$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}} + \cdots$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}} + \cdots$$

$$= \frac{d\log(x)}{ac} - \frac{d\log(c+dx)}{ac} - \frac{\log(c+dx)}{ax} + \frac{\sqrt[4]{b}\log\left(\frac{d\left(\sqrt{-\sqrt{-a}}-\sqrt[4]{b}x\right)}{\sqrt[4]{b}c+\sqrt{-\sqrt{-a}}d}\right)\log(c+dx)}{4\left(-\sqrt{-a}\right)^{5/2}} + \cdots$$

<u>Mathematica</u> [A] time = 0.601832, size = 525, normalized size = 0.98

$$\frac{1}{4}\left(\frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt{-\sqrt{-a}}d}\right)}{\sqrt{-\sqrt{-a}}\,a} - \frac{\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt{-\sqrt{-a}}d+\sqrt[4]{b}c}\right)}{\sqrt{-\sqrt{-a}}\,a} + \frac{a\sqrt[4]{b}\,\text{PolyLog}\left(2,\frac{\sqrt[4]{b}(c+dx)}{\sqrt[4]{b}c-\sqrt[4]{-a}d}\right)}{(-a)^{9/4}} + \cdots\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c + d*x]/(x^2*(a + b*x^4)),x]
```

```
[Out] ((4*d*(Log[x] - Log[c + d*x]))/(a*c) - (4*Log[c + d*x])/(a*x) - (b^(1/4)*Lo
g[(d*(Sqrt[-Sqrt[-a]] - b^(1/4)*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)]*Log[c
+ d*x])/(Sqrt[-Sqrt[-a]]*a) + (b^(1/4)*Log[(d*((-a)^(1/4) - b^(1/4)*x))/(b^
(1/4)*c + (-a)^(1/4)*d)]*Log[c + d*x])/(-a)^(5/4) + (b^(1/4)*Log[(d*(Sqrt[-
Sqrt[-a]] + b^(1/4)*x))/(-(b^(1/4)*c) + Sqrt[-Sqrt[-a]]*d)]*Log[c + d*x])/(
Sqrt[-Sqrt[-a]]*a) + (a*b^(1/4)*Log[(d*((-a)^(1/4) + b^(1/4)*x))/(-(b^(1/4)
*c) + (-a)^(1/4)*d)]*Log[c + d*x])/(-a)^(9/4) + (b^(1/4)*PolyLog[2, (b^(1/4
```

```
)*(c + d*x))/(b^(1/4)*c - Sqrt[-Sqrt[-a]]*d)])/(Sqrt[-Sqrt[-a]]*a) - (b^(1/
4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c + Sqrt[-Sqrt[-a]]*d)])/(Sqrt[-
Sqrt[-a]]*a) + (a*b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c - (-a)^
(1/4)*d)])/(-a)^(9/4) + (b^(1/4)*PolyLog[2, (b^(1/4)*(c + d*x))/(b^(1/4)*c
+ (-a)^(1/4)*d)])/(-a)^(5/4))/4
```

Maple [C] time = 0.421, size = 136, normalized size = 0.3

$$-\frac{d}{4a}\sum_{\_R1=\mathrm{RootOf}\left(b\_Z^4-4\_Z^3bc+6\_Z^2bc^2-4\_Z\,bc^3+ad^4+bc^4\right)}\frac{1}{\_R1-c}\left(\ln\left(dx+c\right)\ln\left(\frac{-dx+\_R1-c}{\_R1}\right)+\mathrm{dilog}\left(\frac{-dx+\_R1-c}{\_R1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(d*x+c)/x^2/(b*x^4+a),x)
```

```
[Out] -1/4*d/a*sum(1/(_R1-c)*(ln(d*x+c)*ln((-d*x+_R1-c)/_R1)+dilog((-d*x+_R1-c)/_
R1)),_R1=RootOf(_Z^4*b-4*_Z^3*b*c+6*_Z^2*b*c^2-4*_Z*b*c^3+a*d^4+b*c^4))+d/a
/c*ln(d*x)-d*ln(d*x+c)/a/c-ln(d*x+c)/a/x
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log\left(dx+c\right)}{bx^6+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="fricas")
```

```
[Out] integral(log(d*x + c)/(b*x^6 + a*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(d*x+c)/x**2/(b*x**4+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(dx+c)}{(bx^4+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(d*x+c)/x^2/(b*x^4+a),x, algorithm="giac")
```

```
[Out] integrate(log(d*x + c)/((b*x^4 + a)*x^2), x)
```

3.303 $\int \left(f+\frac{g}{x}\right) x\left(a+b \log \left(c(d+e x)^n\right)\right) dx$

Optimal. Leaf size=91

$$\frac{(fx+g)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{bn(df-eg)^2\log(d+ex)}{2e^2f}+\frac{bnx(df-eg)}{2e}-\frac{bn(fx+g)^2}{4f}$$

```
[Out] (b*(d*f - e*g)*n*x)/(2*e) - (b*n*(g + f*x)^2)/(4*f) - (b*(d*f - e*g)^2*n*Lo
g[d + e*x])/(2*e^2*f) + ((g + f*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*f)
```

Rubi [A] time = 0.0639724, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {2412, 2395, 43}

$$\frac{(fx+g)^2\left(a+b\log\left(c(d+ex)^n\right)\right)}{2f}-\frac{bn(df-eg)^2\log(d+ex)}{2e^2f}+\frac{bnx(df-eg)}{2e}-\frac{bn(fx+g)^2}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)*x*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*(d*f - e*g)*n*x)/(2*e) - (b*n*(g + f*x)^2)/(4*f) - (b*(d*f - e*g)^2*n*Lo
g[d + e*x])/(2*e^2*f) + ((g + f*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*f)
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right)x\,(a+b\log(c(d+ex)^n))\,dx=\int (g+fx)(a+b\log(c(d+ex)^n))\,dx$$
$$=\frac{(g+fx)^2(a+b\log(c(d+ex)^n))}{2f}-\frac{(ben)\int \frac{(g+fx)^2}{d+ex}\,dx}{2f}$$
$$=\frac{(g+fx)^2(a+b\log(c(d+ex)^n))}{2f}-\frac{(ben)\int \left(\frac{f(-df+eg)}{e^2}+\frac{(-df+eg)^2}{e^2(d+ex)}+\frac{f(g+fx)}{e}\right)}{2f}$$
$$=\frac{b(df-eg)nx}{2e}-\frac{bn(g+fx)^2}{4f}-\frac{b(df-eg)^2n\log(d+ex)}{2e^2f}+\frac{(g+fx)^2(a+b}{2}$$

Mathematica [A] time = 0.0555758, size = 101, normalized size = 1.11

$$\frac{1}{2}afx^2+agx+\frac{1}{2}bfx^2\log(c(d+ex)^n)+\frac{bg(d+ex)\log(c(d+ex)^n)}{e}-\frac{bd^2fn\log(d+ex)}{2e^2}+\frac{bdfnx}{2e}-\frac{1}{4}bfnx^2-bgnx$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)*x*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] a*g*x + (b*d*f*n*x)/(2*e) - b*g*n*x + (a*f*x^2)/2 - (b*f*n*x^2)/4 - (b*d^2*
f*n*Log[d + e*x])/(2*e^2) + (b*f*x^2*Log[c*(d + e*x)^n])/2 + (b*g*(d + e*x)
*Log[c*(d + e*x)^n])/e
```

Maple [A] time = 0.086, size = 101, normalized size = 1.1

$$agx+\frac{afx^2}{2}+bg\ln\left(c(ex+d)^n\right)x-bgnx+\frac{bdgn\ln(ex+d)}{e}+\frac{bfx^2\ln\left(ce^{n\ln(ex+d)}\right)}{2}-\frac{nbfx^2}{4}-\frac{d^2bfn\ln(ex+d)}{2e^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)*x*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] a*g*x+1/2*a*f*x^2+b*g*ln(c*(e*x+d)^n)*x-b*g*n*x+b*g/e*n*d*ln(e*x+d)+1/2*b*f
*x^2*ln(c*exp(n*ln(e*x+d)))-1/4*n*b*f*x^2-1/2*n*b*d^2*f/e^2*ln(e*x+d)+1/2*b
*d*f*n*x/e
```

Maxima [A] time = 1.05571, size = 138, normalized size = 1.52

$$-begn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-\frac{1}{4}befn\left(\frac{2d^2\log(ex+d)}{e^3}+\frac{ex^2-2dx}{e^2}\right)+\frac{1}{2}bfx^2\log\left((ex+d)^nc\right)+\frac{1}{2}afx^2+bgx\log\left((e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -b*e*g*n*(x/e - d*log(e*x + d)/e^2) - 1/4*b*e*f*n*(2*d^2*log(e*x + d)/e^3 +
 (e*x^2 - 2*d*x)/e^2) + 1/2*b*f*x^2*log((e*x + d)^n*c) + 1/2*a*f*x^2 + b*g*
x*log((e*x + d)^n*c) + a*g*x
```

Fricas [A] time = 1.95898, size = 267, normalized size = 2.93

$$-\frac{\left(be^2fn-2\,ae^2f\right)x^2-2\left(2\,ae^2g+\left(bdef-2\,be^2g\right)n\right)x-2\left(be^2fnx^2+2\,be^2gnx-\left(bd^2f-2\,bdeg\right)n\right)\log\left(ex+d\right)-2\left(be^2f\right.}{4\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/4*((b*e^2*f*n - 2*a*e^2*f)*x^2 - 2*(2*a*e^2*g + (b*d*e*f - 2*b*e^2*g)*n)
*x - 2*(b*e^2*f*n*x^2 + 2*b*e^2*g*n*x - (b*d^2*f - 2*b*d*e*g)*n)*log(e*x +
d) - 2*(b*e^2*f*x^2 + 2*b*e^2*g*x)*log(c))/e^2
```

Sympy [A] time = 2.91779, size = 148, normalized size = 1.63

$$\begin{cases}\frac{afx^2}{2}+agx-\frac{bd^2fn\log(d+ex)}{2e^2}+\frac{bdfnx}{2e}+\frac{bdgn\log(d+ex)}{e}+\frac{bfnx^2\log(d+ex)}{2}-\frac{bfnx^2}{4}+\frac{bfx^2\log(c)}{2}+bgnx\log(d+ex)-bgnx+bgx\\(a+b\log(cd^n))\left(\frac{fx^2}{2}+gx\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f*x**2/2 + a*g*x - b*d**2*f*n*log(d + e*x)/(2*e**2) + b*d*f*n*
x/(2*e) + b*d*g*n*log(d + e*x)/e + b*f*n*x**2*log(d + e*x)/2 - b*f*n*x**2/4
 + b*f*x**2*log(c)/2 + b*g*n*x*log(d + e*x) - b*g*n*x + b*g*x*log(c), Ne(e,
 0)), ((a + b*log(c*d**n))*(f*x**2/2 + g*x), True))
```

Giac [B] time = 1.2317, size = 251, normalized size = 2.76

$$\frac{1}{2}\,(xe+d)^2bfne^{(-2)}\log(xe+d)-(xe+d)bdfne^{(-2)}\log(xe+d)-\frac{1}{4}\,(xe+d)^2bfne^{(-2)}+(xe+d)bdfne^{(-2)}+(xe+d)bgne$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)*x*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/2*(x*e + d)^2*b*f*n*e^(-2)*log(x*e + d) - (x*e + d)*b*d*f*n*e^(-2)*log(x*
e + d) - 1/4*(x*e + d)^2*b*f*n*e^(-2) + (x*e + d)*b*d*f*n*e^(-2) + (x*e + d
)*b*g*n*e^(-1)*log(x*e + d) + 1/2*(x*e + d)^2*b*f*e^(-2)*log(c) - (x*e + d)
*b*d*f*e^(-2)*log(c) - (x*e + d)*b*g*n*e^(-1) + 1/2*(x*e + d)^2*a*f*e^(-2)
- (x*e + d)*a*d*f*e^(-2) + (x*e + d)*b*g*e^(-1)*log(c) + (x*e + d)*a*g*e^(-
1)
```

3.304 $\int \left(f+\frac{g}{x}\right)^2 x^2 (a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=120

$$\frac{(fx+g)^3(a+b\log(c(d+ex)^n))}{3f}-\frac{bnx(df-eg)^2}{3e^2}+\frac{bn(df-eg)^3\log(d+ex)}{3e^3f}+\frac{bn(fx+g)^2(df-eg)}{6ef}-\frac{bn(fx+g)^3}{9f}$$

```
[Out] -(b*(d*f - e*g)^2*n*x)/(3*e^2) + (b*(d*f - e*g)*n*(g + f*x)^2)/(6*e*f) - (b
*n*(g + f*x)^3)/(9*f) + (b*(d*f - e*g)^3*n*Log[d + e*x])/(3*e^3*f) + ((g +
f*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*f)
```

Rubi [A] time = 0.113123, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2412, 2395, 43}

$$\frac{(fx+g)^3(a+b\log(c(d+ex)^n))}{3f}-\frac{bnx(df-eg)^2}{3e^2}+\frac{bn(df-eg)^3\log(d+ex)}{3e^3f}+\frac{bn(fx+g)^2(df-eg)}{6ef}-\frac{bn(fx+g)^3}{9f}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)^2*x^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*(d*f - e*g)^2*n*x)/(3*e^2) + (b*(d*f - e*g)*n*(g + f*x)^2)/(6*e*f) - (b
*n*(g + f*x)^3)/(9*f) + (b*(d*f - e*g)^3*n*Log[d + e*x])/(3*e^3*f) + ((g +
f*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*f)
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right)^2 x^2 \left(a+b\log\left(c(d+ex)^n\right)\right)\,dx = \int (g+fx)^2\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$$
$$= \frac{(g+fx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3f} - \frac{(ben)\int \frac{(g+fx)^3}{d+ex}\,dx}{3f}$$
$$= \frac{(g+fx)^3\left(a+b\log\left(c(d+ex)^n\right)\right)}{3f} - \frac{(ben)\int \left(\frac{f(-df+eg)^2}{e^3}+\frac{(-df+eg)^3}{e^3(d+ex)}+\frac{f(-df+eg)}{e^2}\right.}{3f}$$
$$= -\frac{b(df-eg)^2nx}{3e^2} + \frac{b(df-eg)n(g+fx)^2}{6ef} - \frac{bn(g+fx)^3}{9f} + \frac{b(df-eg)^3n\log(d}{3e^3f}$$

Mathematica [A] time = 0.140217, size = 150, normalized size = 1.25

$$\frac{e\left(x\left(6ae^2\left(f^2x^2+3fgx+3g^2\right)-bn\left(6d^2f^2-3def(fx+6g)+e^2\left(2f^2x^2+9fgx+18g^2\right)\right)\right)+6be\left(3dg^2+ex\left(f^2x^2+3fg\right.\right.\right.}{18e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)^2*x^2*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*b*d^2*f*(d*f - 3*e*g)*n*Log[d + e*x] + e*(x*(6*a*e^2*(3*g^2 + 3*f*g*x +
f^2*x^2) - b*n*(6*d^2*f^2 - 3*d*e*f*(6*g + f*x) + e^2*(18*g^2 + 9*f*g*x + 2
*f^2*x^2))) + 6*b*e*(3*d*g^2 + e*x*(3*g^2 + 3*f*g*x + f^2*x^2))*Log[c*(d +
e*x)^n]))/(18*e^3)
```

Maple [C] time = 0.465, size = 585, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)^2*x^2*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/3*f^2*a*x^3+1/3*f^2*ln(c)*b*x^3+ln(c)*b*g^2*x+f*ln(c)*b*g*x^2+a*g^2*x-1/3
/f*ln(e*x+d)*b*g^3*n-1/2*I*Pi*b*g^2*x*csgn(I*c*(e*x+d)^n)^3+f*a*g*x^2-1/9*f
^2*b*n*x^3+1/3*(f*x+g)^3*b/f*ln((e*x+d)^n)-1/3/e^2*f^2*b*d^2*n*x-b*g^2*n*x+
1/3/e^3*f^2*ln(e*x+d)*b*d^3*n+1/e*ln(e*x+d)*b*d*g^2*n-1/6*I*f^2*Pi*b*x^3*cs
gn(I*c*(e*x+d)^n)^3+1/6/e*f^2*b*d*n*x^2-1/2*f*b*g*n*x^2-1/2*I*Pi*b*g^2*x*cs
gn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I*f^2*Pi*b*x^3*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*f*Pi*b*g*x^2*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2+1/2*I*f*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/
6*I*f^2*Pi*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*f*Pi*b*g*x^2
*csgn(I*c*(e*x+d)^n)^3+1/2*I*Pi*b*g^2*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2
*I*Pi*b*g^2*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/e*f*b*d*g*n*x-1/e^2
*f*ln(e*x+d)*b*d^2*g*n+1/6*I*f^2*Pi*b*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1
/2*I*f*Pi*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
```

Maxima [A] time = 1.10652, size = 252, normalized size = 2.1

$$\frac{1}{3}bf^2x^3\log\left((ex+d)^nc\right)+\frac{1}{3}af^2x^3-beg^2n\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+\frac{1}{18}bef^2n\left(\frac{6d^3\log(ex+d)}{e^4}-\frac{2e^2x^3-3dex^2+6d^2x}{e^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/3*b*f^2*x^3*log((e*x + d)^n*c) + 1/3*a*f^2*x^3 - b*e*g^2*n*(x/e - d*log(e
*x + d)/e^2) + 1/18*b*e*f^2*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*
x^2 + 6*d^2*x)/e^3) - 1/2*b*e*f*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + b*f*g*x^2*log((e*x + d)^n*c) + a*f*g*x^2 + b*g^2*x*log((e*x + d)^
n*c) + a*g^2*x
```

Fricas [A] time = 1.90533, size = 474, normalized size = 3.95

$$-\frac{2\left(be^3f^2n-3\,ae^3f^2\right)x^3-3\left(6\,ae^3fg+\left(bde^2f^2-3\,be^3fg\right)n\right)x^2-6\left(3\,ae^3g^2-\left(bd^2ef^2-3\,bde^2fg+3\,be^3g^2\right)n\right)x-6\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/18*(2*(b*e^3*f^2*n - 3*a*e^3*f^2)*x^3 - 3*(6*a*e^3*f*g + (b*d*e^2*f^2 -
3*b*e^3*f*g)*n)*x^2 - 6*(3*a*e^3*g^2 - (b*d^2*e*f^2 - 3*b*d*e^2*f*g + 3*b*e
^3*g^2)*n)*x - 6*(b*e^3*f^2*n*x^3 + 3*b*e^3*f*g*n*x^2 + 3*b*e^3*g^2*n*x + (
b*d^3*f^2 - 3*b*d^2*e*f*g + 3*b*d*e^2*g^2)*n)*log(e*x + d) - 6*(b*e^3*f^2*x
^3 + 3*b*e^3*f*g*x^2 + 3*b*e^3*g^2*x)*log(c))/e^3
```

Sympy [A] time = 11.0701, size = 277, normalized size = 2.31

$$\begin{cases}\frac{af^2x^3}{3}+afgx^2+ag^2x+\frac{bd^3f^2n\log(d+ex)}{3e^3}-\frac{bd^2f^2nx}{3e^2}-\frac{bd^2fgn\log(d+ex)}{e^2}+\frac{bdf^2nx^2}{6e}+\frac{bdfgnx}{e}+\frac{bdg^2n\log(d+ex)}{e}+\frac{bf^2nx^3\log(d+ex)}{3} \\ (a+b\log(cd^n))\left(\frac{f^2x^3}{3}+fgx^2+g^2x\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)**2*x**2*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**2*x**3/3 + a*f*g*x**2 + a*g**2*x + b*d**3*f**2*n*log(d + e*
x)/(3*e**3) - b*d**2*f**2*n*x/(3*e**2) - b*d**2*f*g*n*log(d + e*x)/e**2 + b
*d*f**2*n*x**2/(6*e) + b*d*f*g*n*x/e + b*d*g**2*n*log(d + e*x)/e + b*f**2*n
*x**3*log(d + e*x)/3 - b*f**2*n*x**3/9 + b*f**2*x**3*log(c)/3 + b*f*g*n*x**
2*log(d + e*x) - b*f*g*n*x**2/2 + b*f*g*x**2*log(c) + b*g**2*n*x*log(d + e*
x) - b*g**2*n*x + b*g**2*x*log(c), Ne(e, 0)), ((a + b*log(c*d**n))*(f**2*x*
*3/3 + f*g*x**2 + g**2*x), True))
```

Giac [B] time = 1.29719, size = 581, normalized size = 4.84

$$\frac{1}{3}(xe+d)^3bf^2ne^{(-3)}\log(xe+d)-(xe+d)^2bdf^2ne^{(-3)}\log(xe+d)+(xe+d)bd^2f^2ne^{(-3)}\log(xe+d)-\frac{1}{9}(xe+d)^3bf^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^2*x^2*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

[Out] 1/3*(x*e + d)^3*b*f^2*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*f^2*n*e^(-3)*log(x*e + d) + (x*e + d)*b*d^2*f^2*n*e^(-3)*log(x*e + d) - 1/9*(x*e + d)^3*b*f^2*n*e^(-3) + 1/2*(x*e + d)^2*b*d*f^2*n*e^(-3) - (x*e + d)*b*d^2*f^2*n*e^(-3) + (x*e + d)^2*b*f*g*n*e^(-2)*log(x*e + d) - 2*(x*e + d)*b*d*f*g*n*e^(-2)*log(x*e + d) + 1/3*(x*e + d)^3*b*f^2*e^(-3)*log(c) - (x*e + d)^2*b*d*f^2*e^(-3)*log(c) + (x*e + d)*b*d^2*f^2*e^(-3)*log(c) - 1/2*(x*e + d)^2*b*f*g*n*e^(-2) + 2*(x*e + d)*b*d*f*g*n*e^(-2) + 1/3*(x*e + d)^3*a*f^2*e^(-3) - (x*e + d)^2*a*d*f^2*e^(-3) + (x*e + d)*a*d^2*f^2*e^(-3) + (x*e + d)*b*g^2*n*e^(-1)*log(x*e + d) + (x*e + d)^2*b*f*g*e^(-2)*log(c) - 2*(x*e + d)*b*d*f*g*e^(-2)*log(c) - (x*e + d)*b*g^2*n*e^(-1) + (x*e + d)^2*a*f*g*e^(-2) - 2*(x*e + d)*a*d*f*g*e^(-2) + (x*e + d)*b*g^2*e^(-1)*log(c) + (x*e + d)*a*g^2*e^(-1)

3.305 $\int \left(f+\frac{g}{x}\right)^3 x^3 (a+b\log (c(d+ex)^n))\,dx$

Optimal. Leaf size=149

$$\frac{(fx+g)^4(a+b\log(c(d+ex)^n))}{4f}+\frac{bnx(df-eg)^3}{4e^3}-\frac{bn(fx+g)^2(df-eg)^2}{8e^2f}-\frac{bn(df-eg)^4\log(d+ex)}{4e^4f}+\frac{bn(fx+g)^3}{12e}$$

```
[Out] (b*(d*f - e*g)^3*n*x)/(4*e^3) - (b*(d*f - e*g)^2*n*(g + f*x)^2)/(8*e^2*f) +
 (b*(d*f - e*g)*n*(g + f*x)^3)/(12*e*f) - (b*n*(g + f*x)^4)/(16*f) - (b*(d*
f - e*g)^4*n*Log[d + e*x])/(4*e^4*f) + ((g + f*x)^4*(a + b*Log[c*(d + e*x)^
n]))/(4*f)
```

Rubi [A] time = 0.12266, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2412, 2395, 43}

$$\frac{(fx+g)^4(a+b\log(c(d+ex)^n))}{4f}+\frac{bnx(df-eg)^3}{4e^3}-\frac{bn(fx+g)^2(df-eg)^2}{8e^2f}-\frac{bn(df-eg)^4\log(d+ex)}{4e^4f}+\frac{bn(fx+g)^3}{12e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g/x)^3*x^3*(a + b*Log[c*(d + e*x)^n]),x]
```


```
[Out] (b*(d*f - e*g)^3*n*x)/(4*e^3) - (b*(d*f - e*g)^2*n*(g + f*x)^2)/(8*e^2*f) +
 (b*(d*f - e*g)*n*(g + f*x)^3)/(12*e*f) - (b*n*(g + f*x)^4)/(16*f) - (b*(d*
f - e*g)^4*n*Log[d + e*x])/(4*e^4*f) + ((g + f*x)^4*(a + b*Log[c*(d + e*x)^
n]))/(4*f)
```


Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int \left(f+\frac{g}{x}\right)^3 x^3 (a+b\log(c(d+ex)^n))\,dx = \int (g+fx)^3 (a+b\log(c(d+ex)^n))\,dx$$
$$= \frac{(g+fx)^4 (a+b\log(c(d+ex)^n))}{4f} - \frac{(ben)\int \frac{(g+fx)^4}{d+ex}\,dx}{4f}$$
$$= \frac{(g+fx)^4 (a+b\log(c(d+ex)^n))}{4f} - \frac{(ben)\int \left(\frac{f(-df+eg)^3}{e^4} + \frac{(-df+eg)^4}{e^4(d+ex)} + \frac{f(-df+eg)}{e^3}\right.}{4f}$$
$$= \frac{b(df-eg)^3 nx}{4e^3} - \frac{b(df-eg)^2 n(g+fx)^2}{8e^2 f} + \frac{b(df-eg)n(g+fx)^3}{12ef} - \frac{bn(g+fx}{16f}$$

<u>**Mathematica [A]**</u> time = 0.208142, size = 226, normalized size = 1.52

$$\frac{ex\left(12ae^3\left(4f^2gx^2+f^3x^3+6fg^2x+4g^3\right)+bn\left(-6d^2ef^2(fx+8g)+12d^3f^3+4de^2f\left(f^2x^2+6fgx+18g^2\right)+e^3\left(-\left(16f^2\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g/x)^3*x^3*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*x*(12*a*e^3*(4*g^3 + 6*f*g^2*x + 4*f^2*g*x^2 + f^3*x^3) + b*n*(12*d^3*f^
3 - 6*d^2*e*f^2*(8*g + f*x) + 4*d*e^2*f*(18*g^2 + 6*f*g*x + f^2*x^2) - e^3*
(48*g^3 + 36*f*g^2*x + 16*f^2*g*x^2 + 3*f^3*x^3))) - 12*b*d^2*f*(d^2*f^2 -
4*d*e*f*g + 6*e^2*g^2)*n*Log[d + e*x] + 12*b*e^3*(4*d*g^3 + e*x*(4*g^3 + 6*
f*g^2*x + 4*f^2*g*x^2 + f^3*x^3))*Log[c*(d + e*x)^n])/(48*e^4)
```

<u>**Maple [C]**</u> time = 0.481, size = 836, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f+g/x)^3*x^3*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/4*f^3*a*x^4+1/4*f^3*ln(c)*b*x^4+ln(c)*b*g^3*x+1/4*(f*x+g)^4*b/f*ln((e*x+d
)^n)+3/2*f*a*g^2*x^2-1/16*f^3*b*n*x^4+f^2*a*g*x^3+a*g^3*x-1/4/f*ln(e*x+d)*b
*g^4*n+f^2*ln(c)*b*g*x^3+3/2*f*ln(c)*b*g^2*x^2+3/4*I*f*Pi*b*g^2*x^2*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2+3/4*I*f*Pi*b*g^2*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2+1/2*I*f^2*Pi*b*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I*f^3*P
i*b*x^4*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*f^2*Pi*b*g*x^
3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*Pi*b*g^3*x*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3/2/e*f*b*d*g^2*n*x+1/2/e*f^2*b*d*g*n*x^2-1
/e^2*f^2*b*d^2*g*n*x+1/e^3*f^2*ln(e*x+d)*b*d^3*g*n-3/2/e^2*f*ln(e*x+d)*b*d^
2*g^2*n+1/8*I*f^3*Pi*b*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-3/4*f*b*g^2*n*x^
2+1/12/e*f^3*b*d*n*x^3-1/3*f^2*b*g*n*x^3-1/8/e^2*f^3*b*d^2*n*x^2-3/4*I*f*Pi
*b*g^2*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*f^2*Pi*b*g
*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4/e^3*f^3*b*d^3*n*x-
b*g^3*n*x+1/e*ln(e*x+d)*b*d*g^3*n-1/4/e^4*f^3*ln(e*x+d)*b*d^4*n-1/2*I*Pi*b*
g^3*x*csgn(I*c*(e*x+d)^n)^3-1/8*I*f^3*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3-3/4*I*
f*Pi*b*g^2*x^2*csgn(I*c*(e*x+d)^n)^3+1/8*I*f^3*Pi*b*x^4*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-1/2*I*f^2*Pi*b*g*x^3*csgn(I*c*(e*x+d)^n)^3+1/2*I*Pi*b*
g^3*x*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*Pi*b*g^3*x*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2
```

Maxima [B] time = 1.14845, size = 383, normalized size = 2.57

$$\frac{1}{4}\,bf^3x^4\log\left((ex+d)^nc\right)+\frac{1}{4}\,af^3x^4+bf^2gx^3\log\left((ex+d)^nc\right)+af^2gx^3-beg^3n\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)-\frac{1}{48}\,bef^3n\left(\frac{12\,d^4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/4*b*f^3*x^4*log((e*x + d)^n*c) + 1/4*a*f^3*x^4 + b*f^2*g*x^3*log((e*x + d
)^n*c) + a*f^2*g*x^3 - b*e*g^3*n*(x/e - d*log(e*x + d)/e^2) - 1/48*b*e*f^3*
n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*d^
3*x)/e^4) + 1/6*b*e*f^2*g*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^
2 + 6*d^2*x)/e^3) - 3/4*b*e*f*g^2*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*
x)/e^2) + 3/2*b*f*g^2*x^2*log((e*x + d)^n*c) + 3/2*a*f*g^2*x^2 + b*g^3*x*lo
g((e*x + d)^n*c) + a*g^3*x
```

Fricas [B] time = 1.95985, size = 713, normalized size = 4.79

$$-\frac{3\left(be^4f^3n-4\,ae^4f^3\right)x^4-4\left(12\,ae^4f^2g+\left(bde^3f^3-4\,be^4f^2g\right)n\right)x^3-6\left(12\,ae^4fg^2-\left(bd^2e^2f^3-4\,bde^3f^2g+6\,be^4fg^2\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] -1/48*(3*(b*e^4*f^3*n - 4*a*e^4*f^3)*x^4 - 4*(12*a*e^4*f^2*g + (b*d*e^3*f^3
 - 4*b*e^4*f^2*g)*n)*x^3 - 6*(12*a*e^4*f*g^2 - (b*d^2*e^2*f^3 - 4*b*d*e^3*f
^2*g + 6*b*e^4*f*g^2)*n)*x^2 - 12*(4*a*e^4*g^3 + (b*d^3*e*f^3 - 4*b*d^2*e^2
*f^2*g + 6*b*d*e^3*f*g^2 - 4*b*e^4*g^3)*n)*x - 12*(b*e^4*f^3*n*x^4 + 4*b*e^
4*f^2*g*n*x^3 + 6*b*e^4*f*g^2*n*x^2 + 4*b*e^4*g^3*n*x - (b*d^4*f^3 - 4*b*d^
3*e*f^2*g + 6*b*d^2*e^2*f*g^2 - 4*b*d*e^3*g^3)*n)*log(e*x + d) - 12*(b*e^4*
f^3*x^4 + 4*b*e^4*f^2*g*x^3 + 6*b*e^4*f*g^2*x^2 + 4*b*e^4*g^3*x)*log(c))/e^
4
```

Sympy [A] time = 42.5615, size = 450, normalized size = 3.02

$$\begin{cases}\frac{af^3x^4}{4}+af^2gx^3+\frac{3afg^2x^2}{2}+ag^3x-\frac{bd^4f^3n\log\left(d+ex\right)}{4e^4}+\frac{bd^3f^3nx}{4e^3}+\frac{bd^3f^2gn\log\left(d+ex\right)}{e^3}-\frac{bd^2f^3nx^2}{8e^2}-\frac{bd^2f^2gnx}{e^2}-\frac{3bd^2fg^2n\log\left(d+ex\right)}{2e^2} \\ \left(a+b\log\left(cd^n\right)\right)\left(\frac{f^3x^4}{4}+f^2gx^3+\frac{3fg^2x^2}{2}+g^3x\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)**3*x**3*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*f**3*x**4/4 + a*f**2*g*x**3 + 3*a*f*g**2*x**2/2 + a*g**3*x - b
*d**4*f**3*n*log(d + e*x)/(4*e**4) + b*d**3*f**3*n*x/(4*e**3) + b*d**3*f**2
*g*n*log(d + e*x)/e**3 - b*d**2*f**3*n*x**2/(8*e**2) - b*d**2*f**2*g*n*x/e*
*2 - 3*b*d**2*f*g**2*n*log(d + e*x)/(2*e**2) + b*d*f**3*n*x**3/(12*e) + b*d
*f**2*g*n*x**2/(2*e) + 3*b*d*f*g**2*n*x/(2*e) + b*d*g**3*n*log(d + e*x)/e +
 b*f**3*n*x**4*log(d + e*x)/4 - b*f**3*n*x**4/16 + b*f**3*x**4*log(c)/4 + b
*f**2*g*n*x**3*log(d + e*x) - b*f**2*g*n*x**3/3 + b*f**2*g*x**3*log(c) + 3*
```

```
b*f*g**2*n*x**2*log(d + e*x)/2 - 3*b*f*g**2*n*x**2/4 + 3*b*f*g**2*x**2*log(
c)/2 + b*g**3*n*x*log(d + e*x) - b*g**3*n*x + b*g**3*x*log(c), Ne(e, 0)), (
(a + b*log(c*d**n))*(f**3*x**4/4 + f**2*g*x**3 + 3*f*g**2*x**2/2 + g**3*x),
 True))
```

Giac [B] time = 1.33416, size = 1053, normalized size = 7.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f+g/x)^3*x^3*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*b*f^3*n*e^(-4)*log(x*e + d) - (x*e + d)^3*b*d*f^3*n*e^(-4)*
log(x*e + d) + 3/2*(x*e + d)^2*b*d^2*f^3*n*e^(-4)*log(x*e + d) - (x*e + d)*
b*d^3*f^3*n*e^(-4)*log(x*e + d) - 1/16*(x*e + d)^4*b*f^3*n*e^(-4) + 1/3*(x*
e + d)^3*b*d*f^3*n*e^(-4) - 3/4*(x*e + d)^2*b*d^2*f^3*n*e^(-4) + (x*e + d)*
b*d^3*f^3*n*e^(-4) + (x*e + d)^3*b*f^2*g*n*e^(-3)*log(x*e + d) - 3*(x*e + d
)^2*b*d*f^2*g*n*e^(-3)*log(x*e + d) + 3*(x*e + d)*b*d^2*f^2*g*n*e^(-3)*log(
x*e + d) + 1/4*(x*e + d)^4*b*f^3*e^(-4)*log(c) - (x*e + d)^3*b*d*f^3*e^(-4)
*log(c) + 3/2*(x*e + d)^2*b*d^2*f^3*e^(-4)*log(c) - (x*e + d)*b*d^3*f^3*e^(
-4)*log(c) - 1/3*(x*e + d)^3*b*f^2*g*n*e^(-3) + 3/2*(x*e + d)^2*b*d*f^2*g*n
*e^(-3) - 3*(x*e + d)*b*d^2*f^2*g*n*e^(-3) + 1/4*(x*e + d)^4*a*f^3*e^(-4) -
 (x*e + d)^3*a*d*f^3*e^(-4) + 3/2*(x*e + d)^2*a*d^2*f^3*e^(-4) - (x*e + d)*
a*d^3*f^3*e^(-4) + 3/2*(x*e + d)^2*b*f*g^2*n*e^(-2)*log(x*e + d) - 3*(x*e +
 d)*b*d*f*g^2*n*e^(-2)*log(x*e + d) + (x*e + d)^3*b*f^2*g*e^(-3)*log(c) - 3
*(x*e + d)^2*b*d*f^2*g*e^(-3)*log(c) + 3*(x*e + d)*b*d^2*f^2*g*e^(-3)*log(c
) - 3/4*(x*e + d)^2*b*f*g^2*n*e^(-2) + 3*(x*e + d)*b*d*f*g^2*n*e^(-2) + (x*
e + d)^3*a*f^2*g*e^(-3) - 3*(x*e + d)^2*a*d*f^2*g*e^(-3) + 3*(x*e + d)*a*d^
2*f^2*g*e^(-3) + (x*e + d)*b*g^3*n*e^(-1)*log(x*e + d) + 3/2*(x*e + d)^2*b*
f*g^2*e^(-2)*log(c) - 3*(x*e + d)*b*d*f*g^2*e^(-2)*log(c) - (x*e + d)*b*g^3
*n*e^(-1) + 3/2*(x*e + d)^2*a*f*g^2*e^(-2) - 3*(x*e + d)*a*d*f*g^2*e^(-2) +
 (x*e + d)*b*g^3*e^(-1)*log(c) + (x*e + d)*a*g^3*e^(-1)
```

3.306 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)x}\,dx$

Optimal. Leaf size=63

$$\frac{bn\text{PolyLog}\left(2,\frac{f(d+ex)}{df-eg}\right)}{f}+\frac{\log\left(-\frac{e(fx+g)}{df-eg}\right)(a+b\log\left(c(d+ex)^n\right))}{f}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[-((e*(g + f*x))/(d*f - e*g))])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

Rubi [A] time = 0.100408, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {2412, 2394, 2393, 2391}

$$\frac{bn\text{PolyLog}\left(2,\frac{f(d+ex)}{df-eg}\right)}{f}+\frac{\log\left(-\frac{e(fx+g)}{df-eg}\right)(a+b\log\left(c(d+ex)^n\right))}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[-((e*(g + f*x))/(d*f - e*g))])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)x}\,dx = \int \frac{a+b\log(c(d+ex)^n)}{g+fx}\,dx$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f} - \frac{(ben)\int \frac{\log\left(\frac{e(g+fx)}{-df+eg}\right)}{d+ex}dx}{f}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f} - \frac{(bn)\,\mathrm{Subst}\left(\int \frac{\log\left(1+\frac{fx}{-df+eg}\right)}{x}dx, x, d+ex\right)}{f}$$
$$= \frac{(a+b\log(c(d+ex)^n))\log\left(-\frac{e(g+fx)}{df-eg}\right)}{f} + \frac{bn\mathrm{Li}_2\left(\frac{f(d+ex)}{df-eg}\right)}{f}$$

Mathematica [A] time = 0.0134861, size = 62, normalized size = 0.98

$$\frac{bn\mathrm{PolyLog}\left(2,\frac{f(d+ex)}{df-eg}\right)}{f} + \frac{\log\left(\frac{e(fx+g)}{eg-df}\right)(a+b\log(c(d+ex)^n))}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)*x),x]
```

```
[Out] ((a + b*Log[c*(d + e*x)^n])*Log[(e*(g + f*x))/(-(d*f) + e*g)])/f + (b*n*Pol
yLog[2, (f*(d + e*x))/(d*f - e*g)])/f
```

Maple [C] time = 0.584, size = 261, normalized size = 4.1

$$\frac{b\ln\left(fx+g\right)\ln\left((ex+d)^n\right)}{f} - \frac{bn}{f}\mathrm{dilog}\left(\frac{\left(fx+g\right)e+df-eg}{df-eg}\right) - \frac{bn\ln\left(fx+g\right)}{f}\ln\left(\frac{\left(fx+g\right)e+df-eg}{df-eg}\right) - \frac{i}{2}\ln\left(fx+g\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(f+g/x)/x,x)
```

```
[Out] b*ln(f*x+g)/f*ln((e*x+d)^n)-b/f*n*dilog(((f*x+g)*e+d*f-e*g)/(d*f-e*g))-b/f*
n*ln(f*x+g)*ln(((f*x+g)*e+d*f-e*g)/(d*f-e*g))-1/2*I*ln(f*x+g)/f*b*Pi*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/2*I*ln(f*x+g)/f*b*Pi*csgn(I*c*(e*x+d)^n)^3+ln(f*x+g)/f*b*ln(c)+
a*ln(f*x+g)/f
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log\left((ex+d)^n\right)+\log(c)}{fx+g}\,dx + \frac{a\log\left(fx+g\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="maxima")
```

```
[Out] b*integrate((log((e*x + d)^n) + log(c))/(f*x + g), x) + a*log(f*x + g)/f
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b \log\left((ex+d)^n c\right) + a}{fx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)/(f*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b \log\left(c\,(d+ex)^n\right)}{fx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)/x,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))/(f*x + g), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log\left((ex+d)^n c\right) + a}{\left(f + \frac{g}{x}\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)/((f + g/x)*x), x)
```

3.307 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)^2 x^2} dx$

Optimal. Leaf size=74

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{f(fx+g)}-\frac{ben\log(d+ex)}{f(df-eg)}+\frac{ben\log(fx+g)}{f(df-eg)}$$

```
[Out] -((b*e*n*Log[d + e*x])/(f*(d*f - e*g))) - (a + b*Log[c*(d + e*x)^n])/(f*(g
+ f*x)) + (b*e*n*Log[g + f*x])/(f*(d*f - e*g))
```

Rubi [A] time = 0.0830582, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {2412, 2395, 36, 31}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{f(fx+g)}-\frac{ben\log(d+ex)}{f(df-eg)}+\frac{ben\log(fx+g)}{f(df-eg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^2*x^2),x]
```

```
[Out] -((b*e*n*Log[d + e*x])/(f*(d*f - e*g))) - (a + b*Log[c*(d + e*x)^n])/(f*(g
+ f*x)) + (b*e*n*Log[g + f*x])/(f*(d*f - e*g))
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)^2 x^2}\,dx = \int \frac{a+b\log\left(c(d+ex)^n\right)}{(g+fx)^2}\,dx$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)} + \frac{(ben)\int \frac{1}{(d+ex)(g+fx)}\,dx}{f}$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)} + \frac{(ben)\int \frac{1}{g+fx}\,dx}{df-eg} - \frac{\left(be^2n\right)\int \frac{1}{d+ex}\,dx}{f(df-eg)}$$
$$= -\frac{ben\log(d+ex)}{f(df-eg)} - \frac{a+b\log\left(c(d+ex)^n\right)}{f(g+fx)} + \frac{ben\log(g+fx)}{f(df-eg)}$$

Mathematica [A] time = 0.0687515, size = 57, normalized size = 0.77

$$\frac{\frac{ben(\log(d+ex)-\log(fx+g))}{eg-df} - \frac{a+b\log(c(d+ex)^n)}{fx+g}}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^2*x^2),x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])/(g + f*x)) + (b*e*n*(Log[d + e*x] - Log[g + f
*x]))/(-(d*f) + e*g))/f
```

Maple [C] time = 0.314, size = 354, normalized size = 4.8

$$-\frac{b\ln\left((ex+d)^n\right)}{\left(fx+g\right)f} - \frac{-i\pi\, beg\,\mathrm{csgn}\left(i\,(ex+d)^n\right)\left(\mathrm{csgn}\left(ic\,(ex+d)^n\right)\right)^2 + i\pi\, bdf\,\mathrm{csgn}\,(ic)\left(\mathrm{csgn}\left(ic\,(ex+d)^n\right)\right)^2 - i\pi\, begcs$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(f+g/x)^2/x^2,x)
```

```
[Out] -b/f/(f*x+g)*ln((e*x+d)^n)-1/2*(-I*Pi*b*e*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^2+I*Pi*b*d*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e*g*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2+I*Pi*b*d*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi
*b*e*g*csgn(I*c*(e*x+d)^n)^3+I*Pi*b*e*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-I*Pi*b*d*f*csgn(I*c*(e*x+d)^n)^3-I*Pi*b*d*f*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+2*ln(e*x+d)*b*e*f*n*x-2*ln(-f*x-g)*b*e*f*n*x+
2*ln(e*x+d)*b*e*g*n-2*ln(-f*x-g)*b*e*g*n+2*ln(c)*b*d*f-2*ln(c)*b*e*g+2*a*d*
f-2*a*e*g)/(f*x+g)/f/(d*f-e*g)
```

Maxima [A] time = 1.10073, size = 116, normalized size = 1.57

$$-ben\left(\frac{\log(ex+d)}{df^2-efg} - \frac{\log\left(fx+g\right)}{df^2-efg}\right) - \frac{b\log\left((ex+d)^n c\right)}{f^2x+fg} - \frac{a}{f^2x+fg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="maxima")
```

```
[Out] -b*e*n*(log(e*x + d)/(d*f^2 - e*f*g) - log(f*x + g)/(d*f^2 - e*f*g)) - b*lo
g((e*x + d)^n*c)/(f^2*x + f*g) - a/(f^2*x + f*g)
```

Fricas [A] time = 2.03052, size = 215, normalized size = 2.91

$$-\frac{adf - aeg + (befnx + bdfn)\log(ex+d) - (befnx + begn)\log(fx+g) + (bdf - beg)\log(c)}{df^2g - efg^2 + (df^3 - ef^2g)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="fricas")
```

```
[Out] -(a*d*f - a*e*g + (b*e*f*n*x + b*d*f*n)*log(e*x + d) - (b*e*f*n*x + b*e*g*n
)*log(f*x + g) + (b*d*f - b*e*g)*log(c))/(d*f^2*g - e*f*g^2 + (d*f^3 - e*f^
2*g)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)**2/x**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.30473, size = 150, normalized size = 2.03

$$\frac{bfnxe\log(fx+g) - bfnxe\log(xe+d) + bgne\log(fx+g) - bdfn\log(xe+d) - bdf\log(c) + bge\log(c) - adf + age}{df^3x - f^2gxe + df^2g - fg^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^2/x^2,x, algorithm="giac")
```

```
[Out] (b*f*n*x*e*log(f*x + g) - b*f*n*x*e*log(x*e + d) + b*g*n*e*log(f*x + g) - b
*d*f*n*log(x*e + d) - b*d*f*log(c) + b*g*e*log(c) - a*d*f + a*g*e)/(d*f^3*x
 - f^2*g*x*e + d*f^2*g - f*g^2*e)
```

3.308 $\int \frac{a+b\log(c(d+ex)^n)}{\left(f+\frac{g}{x}\right)^3 x^3}\,dx$

Optimal. Leaf size=112

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(fx+g)^2}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{be^2n\log(fx+g)}{2f(df-eg)^2}-\frac{ben}{2f(fx+g)(df-eg)}$$

```
[Out] -(b*e*n)/(2*f*(d*f - e*g)*(g + f*x)) + (b*e^2*n*Log[d + e*x])/(2*f*(d*f - e
*g)^2) - (a + b*Log[c*(d + e*x)^n])/(2*f*(g + f*x)^2) - (b*e^2*n*Log[g + f*
x])/(2*f*(d*f - e*g)^2)
```

Rubi [A] time = 0.11776, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2412, 2395, 44}

$$-\frac{a+b\log\left(c(d+ex)^n\right)}{2f(fx+g)^2}+\frac{be^2n\log(d+ex)}{2f(df-eg)^2}-\frac{be^2n\log(fx+g)}{2f(df-eg)^2}-\frac{ben}{2f(fx+g)(df-eg)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^3*x^3),x]
```


```
[Out] -(b*e*n)/(2*f*(d*f - e*g)*(g + f*x)) + (b*e^2*n*Log[d + e*x])/(2*f*(d*f - e
*g)^2) - (a + b*Log[c*(d + e*x)^n])/(2*f*(g + f*x)^2) - (b*e^2*n*Log[g + f*
x])/(2*f*(d*f - e*g)^2)
```


Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rubi steps

$$\int \frac{a+b\log\left(c(d+ex)^n\right)}{\left(f+\frac{g}{x}\right)^3x^3}\,dx = \int \frac{a+b\log\left(c(d+ex)^n\right)}{(g+fx)^3}\,dx$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2} + \frac{(ben)\int \frac{1}{(d+ex)(g+fx)^2}\,dx}{2f}$$
$$= -\frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2} + \frac{(ben)\int \left(\frac{e^2}{(df-eg)^2(d+ex)} + \frac{f}{(df-eg)(g+fx)^2} - \frac{ef}{(df-eg)^2(g+fx)}\right)dx}{2f}$$
$$= -\frac{ben}{2f(df-eg)(g+fx)} + \frac{be^2n\log(d+ex)}{2f(df-eg)^2} - \frac{a+b\log\left(c(d+ex)^n\right)}{2f(g+fx)^2} - \frac{be^2n\log(g+fx)}{2f(df-eg)^2}$$

Mathematica [A] time = 0.102319, size = 83, normalized size = 0.74

$$-\frac{a+b\log\left(c(d+ex)^n\right) - \frac{ben(fx+g)(e(fx+g)\log(d+ex)-df-e(fx+g)\log(fx+g)+eg)}{(df-eg)^2}}{2f(fx+g)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])/((f + g/x)^3*x^3),x]
```

```
[Out] -(a + b*Log[c*(d + e*x)^n] - (b*e*n*(g + f*x)*(-(d*f) + e*g + e*(g + f*x)*L
og[d + e*x] - e*(g + f*x)*Log[g + f*x]))/(d*f - e*g)^2)/(2*f*(g + f*x)^2)
```

Maple [C] time = 0.347, size = 633, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))/(f+g/x)^3/x^3,x)
```

```
[Out] -1/2*b/f/(f*x+g)^2*ln((e*x+d)^n)-1/4*(2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)-I*Pi*b*e^2*g^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)+2*a*f^2*d^2+2*I*Pi*b*d*e*f*g*csgn(I*c*(e*x+d)^n)^3-4*ln(c)*
b*d*e*f*g-4*a*d*e*f*g+2*ln(c)*b*d^2*f^2+2*ln(c)*b*e^2*g^2+2*b*d*e*f^2*n*x-2
*b*e^2*g^2*n+2*ln(f*x+g)*b*e^2*g^2*n-2*ln(-e*x-d)*b*e^2*g^2*n+2*a*e^2*g^2-I
*Pi*b*d^2*f^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2*I*Pi*b*d*e*
f*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e^2*g^2*csgn(I*c*(e*x+d)
^n)^3-I*Pi*b*d^2*f^2*csgn(I*c*(e*x+d)^n)^3-2*b*e^2*f*g*n*x+2*b*d*e*f*g*n-2*
ln(-e*x-d)*b*e^2*f^2*n*x^2+I*Pi*b*e^2*g^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I
*Pi*b*e^2*g^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d^2*f^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2+2*ln(f*x+g)*b*e^2*f^2*n*x^2-4*ln(-e*x-d)*b*e^2*f*
g*n*x-2*I*Pi*b*d*e*f*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*d^2*f^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+4*ln(f*x+g)*b*e^2*f*g*n*x)/(f*x+g)^2/(d*
f-e*g)^2/f
```

Maxima [A] time = 1.11387, size = 228, normalized size = 2.04

$$\frac{1}{2}\,ben\left(\frac{e\log(ex+d)}{d^2f^3-2\,def^2g+e^2fg^2} - \frac{e\log\left(fx+g\right)}{d^2f^3-2\,def^2g+e^2fg^2} - \frac{1}{df^2g-efg^2+\left(df^3-ef^2g\right)x}\right) - \frac{b\log\left((ex+d)^n c\right)}{2\left(f^3x^2+2\,f^2gx+fg^2\right)} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*b*e*n*(e*log(e*x + d)/(d^2*f^3 - 2*d*e*f^2*g + e^2*f*g^2) - e*log(f*x +
 g)/(d^2*f^3 - 2*d*e*f^2*g + e^2*f*g^2) - 1/(d*f^2*g - e*f*g^2 + (d*f^3 - e
*f^2*g)*x)) - 1/2*b*log((e*x + d)^n*c)/(f^3*x^2 + 2*f^2*g*x + f*g^2) - 1/2*
a/(f^3*x^2 + 2*f^2*g*x + f*g^2)
```

Fricas [B] time = 2.01476, size = 579, normalized size = 5.17

$$-\frac{ad^2f^2 - 2\,adefg + ae^2g^2 + \left(bdef^2 - be^2fg\right)nx + \left(bdefg - be^2g^2\right)n - \left(be^2f^2nx^2 + 2\,be^2fgnx - \left(bd^2f^2 - 2\,bdefg\right)n\right)}{2\left(d^2f^3g^2 - 2\,def^2g^3 + e^2fg^4 + \left(d^2f^5 - 2\,def^4g + e^2f^3g^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(a*d^2*f^2 - 2*a*d*e*f*g + a*e^2*g^2 + (b*d*e*f^2 - b*e^2*f*g)*n*x + (
b*d*e*f*g - b*e^2*g^2)*n - (b*e^2*f^2*n*x^2 + 2*b*e^2*f*g*n*x - (b*d^2*f^2
- 2*b*d*e*f*g)*n)*log(e*x + d) + (b*e^2*f^2*n*x^2 + 2*b*e^2*f*g*n*x + b*e^2
*g^2*n)*log(f*x + g) + (b*d^2*f^2 - 2*b*d*e*f*g + b*e^2*g^2)*log(c))/(d^2*f
^3*g^2 - 2*d*e*f^2*g^3 + e^2*f*g^4 + (d^2*f^5 - 2*d*e*f^4*g + e^2*f^3*g^2)*
x^2 + 2*(d^2*f^4*g - 2*d*e*f^3*g^2 + e^2*f^2*g^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))/(f+g/x)**3/x**3,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.17938, size = 408, normalized size = 3.64

$$-\frac{bf^2nx^2e^2\log\left(fx+g\right) - bf^2nx^2e^2\log\left(xe+d\right) + bdf^2nxe + 2\,bfgnxe^2\log\left(fx+g\right) + bd^2f^2n\log\left(xe+d\right) - 2\,bfgnx}{2\left(d^2f^5x^2 - 2\,df^4gx^2e + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))/(f+g/x)^3/x^3,x, algorithm="giac")
```

```
[Out] -1/2*(b*f^2*n*x^2*e^2*log(f*x + g) - b*f^2*n*x^2*e^2*log(x*e + d) + b*d*f^2
*n*x*e + 2*b*f*g*n*x*e^2*log(f*x + g) + b*d^2*f^2*n*log(x*e + d) - 2*b*f*g*
n*x*e^2*log(x*e + d) - 2*b*d*f*g*n*e*log(x*e + d) - b*f*g*n*x*e^2 + b*d*f*g
*n*e + b*g^2*n*e^2*log(f*x + g) + b*d^2*f^2*log(c) - 2*b*d*f*g*e*log(c) + a
*d^2*f^2 - b*g^2*n*e^2 - 2*a*d*f*g*e + b*g^2*e^2*log(c) + a*g^2*e^2)/(d^2*f
^5*x^2 - 2*d*f^4*g*x^2*e + 2*d^2*f^4*g*x + f^3*g^2*x^2*e^2 - 4*d*f^3*g^2*x*
e + d^2*f^3*g^2 + 2*f^2*g^3*x*e^2 - 2*d*f^2*g^3*e + f*g^4*e^2)
```

3.309 $\int \frac{\log(a+bx)}{c+\frac{d}{x^2}}\,dx$

Optimal. Leaf size=247

$$\frac{\sqrt{d}\,\text{PolyLog}\left(2,\frac{\sqrt{-c}(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\text{PolyLog}\left(2,\frac{\sqrt{-c}(a+bx)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b\left(\sqrt{-c}\right.}{a\sqrt{-c}}\right.}{2(-c)^{3/2}}$$

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])])/(2*(-c)^(3/2))
```

Rubi [A] time = 0.336548, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2409, 2389, 2295, 2394, 2393, 2391}

$$\frac{\sqrt{d}\,\text{PolyLog}\left(2,\frac{\sqrt{-c}(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\,\text{PolyLog}\left(2,\frac{\sqrt{-c}(a+bx)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b\left(\sqrt{-c}\right.}{a\sqrt{-c}}\right.}{2(-c)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[a + b*x]/(c + d/x^2),x]
```

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])])/(2*(-c)^(3/2))
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(a+bx)}{c+\frac{d}{x^2}}\,dx = \int \left(\frac{\log(a+bx)}{c} - \frac{d\log(a+bx)}{c\left(d+cx^2\right)}\right)dx$$

$$= \frac{\int \log(a+bx)\,dx}{c} - \frac{d\int \frac{\log(a+bx)}{d+cx^2}\,dx}{c}$$

$$= \frac{\operatorname{Subst}(\int \log(x)\,dx, x, a+bx)}{bc} - \frac{d\int \left(\frac{\log(a+bx)}{2\sqrt{d}\left(\sqrt{d}-\sqrt{-c}x\right)} + \frac{\log(a+bx)}{2\sqrt{d}\left(\sqrt{d}+\sqrt{-c}x\right)}\right)dx}{c}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\int \frac{\log(a+bx)}{\sqrt{d}-\sqrt{-c}x}\,dx}{2c} - \frac{\sqrt{d}\int \frac{\log(a+bx)}{\sqrt{d}+\sqrt{-c}x}\,dx}{2c}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b\left(\sqrt{d}+\sqrt{-c}x\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b\left(\sqrt{d}+\sqrt{-c}x\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}$$

$$= -\frac{x}{c} + \frac{(a+bx)\log(a+bx)}{bc} - \frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b\left(\sqrt{d}+\sqrt{-c}x\right)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}}$$

Mathematica [A] time = 0.178514, size = 247, normalized size = 1.

$$\frac{\sqrt{d}\operatorname{PolyLog}\left(2,\frac{\sqrt{-c}(a+bx)}{a\sqrt{-c}-b\sqrt{d}}\right)}{2(-c)^{3/2}} - \frac{\sqrt{d}\operatorname{PolyLog}\left(2,\frac{\sqrt{-c}(a+bx)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} - \frac{\sqrt{d}\log(a+bx)\log\left(\frac{b\left(\sqrt{d}-\sqrt{-c}x\right)}{a\sqrt{-c}+b\sqrt{d}}\right)}{2(-c)^{3/2}} + \frac{\sqrt{d}\log(a+bx)\log\left(-\frac{b(}{a}\right.}{2(-c)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[a + b*x]/(c + d/x^2),x]
```

```
[Out] -(x/c) + ((a + b*x)*Log[a + b*x])/(b*c) - (Sqrt[d]*Log[a + b*x]*Log[(b*(Sqr
t[d] - Sqrt[-c]*x))/(a*Sqrt[-c] + b*Sqrt[d])]])/(2*(-c)^(3/2)) + (Sqrt[d]*Lo
g[a + b*x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/(a*Sqrt[-c] - b*Sqrt[d]))]])/(2*
(-c)^(3/2)) + (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c] - b*Sqrt
[d])]])/(2*(-c)^(3/2)) - (Sqrt[d]*PolyLog[2, (Sqrt[-c]*(a + b*x))/(a*Sqrt[-c
] + b*Sqrt[d])]])/(2*(-c)^(3/2))
```

Maple [A] time = 0.07, size = 248, normalized size = 1.

$$\frac{\ln(bx+a)x}{c}+\frac{\ln(bx+a)a}{bc}-\frac{x}{c}-\frac{a}{bc}-\frac{d\ln(bx+a)}{2c}\ln\left(\left(b\sqrt{-cd}-c(bx+a)+ac\right)\left(b\sqrt{-cd}+ac\right)^{-1}\right)\frac{1}{\sqrt{-cd}}+\frac{d\ln(bx+}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)/(c+d/x^2),x)
```

```
[Out] 1/c*ln(b*x+a)*x+1/b/c*ln(b*x+a)*a-x/c-1/b*a/c-1/2*d/c*ln(b*x+a)/(-c*d)^(1/2
)*ln((b*(-c*d)^(1/2)-c*(b*x+a)+a*c)/(b*(-c*d)^(1/2)+a*c))+1/2*d/c*ln(b*x+a)
/(-c*d)^(1/2)*ln((b*(-c*d)^(1/2)+c*(b*x+a)-a*c)/(b*(-c*d)^(1/2)-a*c))-1/2*d
/c/(-c*d)^(1/2)*dilog((b*(-c*d)^(1/2)-c*(b*x+a)+a*c)/(b*(-c*d)^(1/2)+a*c))+
1/2*d/c/(-c*d)^(1/2)*dilog((b*(-c*d)^(1/2)+c*(b*x+a)-a*c)/(b*(-c*d)^(1/2)-a
*c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^2\log(bx+a)}{cx^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(b*x + a)/(c*x^2 + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)/(c+d/x**2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(bx+a)}{c+\frac{d}{x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)/(c+d/x^2),x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)/(c + d/x^2), x)
```

3.310 $\int \frac{x^5(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=831

$$\frac{b^2n^2\log^2(d+ex)d^4}{4e^4g}-\frac{bn\log(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)d^4}{2e^4g}-\frac{2b^2n^2xd^3}{e^3g}+\frac{2bn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)d^3}{e^4g}+3$$

```
[Out] (-2*a*b*d*f*n*x)/(e*g^2) + (2*b^2*d*f*n^2*x)/(e*g^2) - (2*b^2*d^3*n^2*x)/(e
^3*g) - (b^2*f*n^2*(d + e*x)^2)/(4*e^2*g^2) + (3*b^2*d^2*n^2*(d + e*x)^2)/(
4*e^4*g) - (2*b^2*d*n^2*(d + e*x)^3)/(9*e^4*g) + (b^2*n^2*(d + e*x)^4)/(32*
e^4*g) + (b^2*d^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (2*b^2*d*f*n*(d + e*x)*Lo
g[c*(d + e*x)^n])/(e^2*g^2) + (2*b*d^3*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n
]))/(e^4*g) + (b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g^2) -
(3*b*d^2*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^4*g) + (2*b*d*n*(d
+ e*x)^3*(a + b*Log[c*(d + e*x)^n]))/(3*e^4*g) - (b*n*(d + e*x)^4*(a + b*Lo
g[c*(d + e*x)^n]))/(8*e^4*g) - (b*d^4*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)
^n]))/(2*e^4*g) + (x^4*(a + b*Log[c*(d + e*x)^n])^2)/(4*g) + (d*f*(d + e*x)
*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g^2) - (f*(d + e*x)^2*(a + b*Log[c*(d +
 e*x)^n])^2)/(2*e^2*g^2) + (f^2*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3) + (f^2*(a + b*Log[c*(d
+ e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g
^3) + (b*f^2*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/
(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (b*f^2*n*(a + b*Log[c*(d + e*x)^n])*PolyL
og[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 - (b^2*f^2*n^2*Pol
yLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 - (b^2*f^2*n^
2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3
```

Rubi [A] time = 1.08527, antiderivative size = 752, normalized size of antiderivative = 0.9, number of steps used = 28, number of rules used = 19, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.655, Rules used = {2416, 2401, 2389, 2296, 2295, 2390, 2305, 2304, 2398, 2411, 43, 2334, 12, 14, 2301, 2396, 2433, 2374, 6589}

$$\frac{bf^2n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}+\frac{bf^2n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{g^3}-\frac{b^2f^2n^2\text{Po}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-2*a*b*d*f*n*x)/(e*g^2) + (2*b^2*d*f*n^2*x)/(e*g^2) - (2*b^2*d^3*n^2*x)/(e
^3*g) - (b^2*f*n^2*(d + e*x)^2)/(4*e^2*g^2) + (3*b^2*d^2*n^2*(d + e*x)^2)/(
4*e^4*g) - (2*b^2*d*n^2*(d + e*x)^3)/(9*e^4*g) + (b^2*n^2*(d + e*x)^4)/(32*
e^4*g) + (b^2*d^4*n^2*Log[d + e*x]^2)/(4*e^4*g) - (2*b^2*d*f*n*(d + e*x)*Lo
g[c*(d + e*x)^n])/(e^2*g^2) + (b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])
)/(2*e^2*g^2) + (b*n*((48*d^3*(d + e*x))/e^4 - (36*d^2*(d + e*x)^2)/e^4 + (
16*d*(d + e*x)^3)/e^4 - (3*(d + e*x)^4)/e^4 - (12*d^4*Log[d + e*x])/e^4)*(a
 + b*Log[c*(d + e*x)^n]))/(24*g) + (x^4*(a + b*Log[c*(d + e*x)^n])^2)/(4*g)
 + (d*f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e^2*g^2) - (f*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g^2) + (f^2*(a + b*Log[c*(d + e*x)^n])
^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3) + (f^2
*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] -
d*Sqrt[g])])/(2*g^3) + (b*f^2*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (b*f^2*n*(a + b*Log[c*(d
 + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 -
```

```
 (b^2*f^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
g^3 - (b^2*f^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/g^3
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
```

```
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^5 (a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))^2}{g^2}+\frac{x^3(a+b\log(c(d+ex)^n))^2}{g}+\frac{f^2x(a+b\log(c(\ldots}{g^2(f+g\ldots}\right.$$

$$= -\frac{f\int x(a+b\log(c(d+ex)^n))^2\,dx}{g^2}+\frac{f^2\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g^2}+\frac{\int x^3(a+b\log(\ldots}{g\ldots}$$

$$= \frac{x^4(a+b\log(c(d+ex)^n))^2}{4g}-\frac{f\int\left(-\frac{d(a+b\log(c(d+ex)^n))^2}{e}+\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e}\right)dx}{g^2}\ldots$$

$$= \frac{x^4(a+b\log(c(d+ex)^n))^2}{4g}-\frac{f^2\int\frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{5/2}}+\frac{f^2\int\frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{5/2}}\ldots$$

$$= \frac{bn\left(\frac{48d^3(d+ex)}{e^4}-\frac{36d^2(d+ex)^2}{e^4}+\frac{16d(d+ex)^3}{e^4}-\frac{3(d+ex)^4}{e^4}-\frac{12d^4\log(d+ex)}{e^4}\right)(a+b\log(c(d+e\ldots}{24g}$$

$$= \frac{bn\left(\frac{48d^3(d+ex)}{e^4}-\frac{36d^2(d+ex)^2}{e^4}+\frac{16d(d+ex)^3}{e^4}-\frac{3(d+ex)^4}{e^4}-\frac{12d^4\log(d+ex)}{e^4}\right)(a+b\log(c(d+e\ldots}{24g}$$

$$= -\frac{2abdfnx}{eg^2}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{bfn(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g^2}+\frac{bn\left(\frac{48d^3(d+\ldots}{e^4}\right.}{\ldots}$$

$$= -\frac{2abdfnx}{eg^2}+\frac{2b^2dfn^2x}{eg^2}-\frac{2b^2d^3n^2x}{e^3g}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{3b^2d^2n^2(d+ex)^2}{4e^4g}-\frac{2b^2\ldots}{\ldots}$$

$$= -\frac{2abdfnx}{eg^2}+\frac{2b^2dfn^2x}{eg^2}-\frac{2b^2d^3n^2x}{e^3g}-\frac{b^2fn^2(d+ex)^2}{4e^2g^2}+\frac{3b^2d^2n^2(d+ex)^2}{4e^4g}-\frac{2b^2\ldots}{\ldots}$$

Mathematica [C] time = 1.01959, size = 862, normalized size = 1.04

$$\frac{72g^2x^4\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2e^4-144fgx^2\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2e^4+144f^2\left(a-bn\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-144*e^4*f*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 72*e^4*
g^2*x^4*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 144*e^4*f^2*(a -
b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] - 12*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(12*e^2*f*g*(e*x*(2*d - e*x) - 2*(d^2
 - e^2*x^2)*Log[d + e*x]) + g^2*(e*x*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3
*e^3*x^3) + 12*(d^4 - e^4*x^4)*Log[d + e*x]) - 24*e^4*f^2*(Log[d + e*x]*Log
[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - 24*e^4*f^2*(Log[d + e*x]*Log[
1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])) + b^2*n^2*(-72*e^2*f*g*(e*x*(-6*d + e
*x) + (6*d^2 + 4*d*e*x - 2*e^2*x^2)*Log[d + e*x] - 2*(d^2 - e^2*x^2)*Log[d
+ e*x]^2) - g^2*(e*x*(300*d^3 - 78*d^2*e*x + 28*d*e^2*x^2 - 9*e^3*x^3) - 12
*(25*d^4 + 12*d^3*e*x - 6*d^2*e^2*x^2 + 4*d*e^3*x^3 - 3*e^4*x^4)*Log[d + e*
x] + 72*(d^4 - e^4*x^4)*Log[d + e*x]^2) + 144*e^4*f^2*(Log[d + e*x]^2*Log[1
 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyL
og[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqr
t[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + 144*e^4*f^2*(Log[d + e*x]^
2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*P
olyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(288*e^4*g^3)
```

Maple [F] time = 1.493, size = 0, normalized size = 0.

$$\int \frac{x^5\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{4}\,a^2\left(\frac{2\,f^2\log\left(gx^2+f\right)}{g^3}+\frac{gx^4-2\,fx^2}{g^2}\right)+\int\frac{b^2x^5\log\left(\left(ex+d\right)^n\right)^2+2\left(b^2\log\left(c\right)+ab\right)x^5\log\left(\left(ex+d\right)^n\right)+\left(b^2\log\left(c\right)^2+\right.}{gx^2+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/4*a^2*(2*f^2*log(g*x^2 + f)/g^3 + (g*x^4 - 2*f*x^2)/g^2) + integrate((b^2
*x^5*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^5*log((e*x + d)^n) + (b^2*
```

```
log(c)^2 + 2*a*b*log(c))*x^5)/(g*x^2 + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2x^5\log\left((ex+d)^nc\right)^2+2\,abx^5\log\left((ex+d)^nc\right)+a^2x^5}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^5*log((e*x + d)^n*c)^2 + 2*a*b*x^5*log((e*x + d)^n*c) + a^2
*x^5)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^5}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^5/(g*x^2 + f), x)
```

3.311 $\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=499

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{b^2fn^2\text{Poly}}{}$$

```
[Out] (2*a*b*d*n*x)/(e*g) - (2*b^2*d*n^2*x)/(e*g) + (b^2*n^2*(d + e*x)^2)/(4*e^2*
g) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g) - (b*n*(d + e*x)^2*(a
 + b*Log[c*(d + e*x)^n]))/(2*e^2*g) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g) - (f*(
a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g^2) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqr
t[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) - (b*f*n*(a + b*Log[c*(d + e*x)
^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^2 - (b*
f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/g^2 + (b^2*f*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^2 + (b^2*f*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f
] + d*Sqrt[g])])/g^2
```

Rubi [A] time = 0.687801, antiderivative size = 499, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2416, 2401, 2389, 2296, 2295, 2390, 2305, 2304, 2396, 2433, 2374, 6589}

$$-\frac{bfn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{bfn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{b^2fn^2\text{Poly}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```



```
[Out] (2*a*b*d*n*x)/(e*g) - (2*b^2*d*n^2*x)/(e*g) + (b^2*n^2*(d + e*x)^2)/(4*e^2*
g) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g) - (b*n*(d + e*x)^2*(a
 + b*Log[c*(d + e*x)^n]))/(2*e^2*g) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g) - (f*(
a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*g^2) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqr
t[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2) - (b*f*n*(a + b*Log[c*(d + e*x)
^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^2 - (b*
f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
 d*Sqrt[g])])/g^2 + (b^2*f*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/g^2 + (b^2*f*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f
] + d*Sqrt[g])])/g^2
```


Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3 (a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(\frac{x(a+b\log(c(d+ex)^n))^2}{g} - \frac{fx(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int x(a+b\log(c(d+ex)^n))^2\,dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g}$$

$$= \frac{\int \left(-\frac{d(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e}\right)dx}{g} - \frac{f\int \left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{(a+b\log}{2\sqrt{g}(}\right.}{g}$$

$$= \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g^{3/2}} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}x}\,dx}{2g^{3/2}} + \frac{\int (d+ex)(a+b\log(c(d+ex)^n))}{eg}$$

$$= -\frac{f(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} - \frac{f(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\right.}{e\sqrt{-f}-d}\right.}{2g^2}$$

$$= -\frac{d(d+ex)(a+b\log(c(d+ex)^n))^2}{e^2g} + \frac{(d+ex)^2(a+b\log(c(d+ex)^n))^2}{2e^2g} - \frac{f(a+b\log}{}$$

$$= \frac{2abdnx}{eg} + \frac{b^2n^2(d+ex)^2}{4e^2g} - \frac{bn(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g} - \frac{d(d+ex)(a+b\log}{e^2g}$$

$$= \frac{2abdnx}{eg} - \frac{2b^2dn^2x}{eg} + \frac{b^2n^2(d+ex)^2}{4e^2g} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g} - \frac{bn(d+ex)^2(}{}$$

Mathematica [C] time = 0.465138, size = 637, normalized size = 1.28

$$\frac{2bn\left(-2e^2f\left(\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\right)-2e^2f\left(\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)+\log(d+ex)\log\left(1\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*e^2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*e^2*f*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*g*x*(2*d - e*x) - 2*g*(d^2 - e^2*x
^2)*Log[d + e*x] - 2*e^2*f*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*
e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
d*Sqrt[g])]) - 2*e^2*f*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[
f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
])) - b^2*n^2*(g*(e*x*(6*d - e*x) + (-6*d^2 - 4*d*e*x + 2*e^2*x^2)*Log[d +
e*x] + 2*(d^2 - e^2*x^2)*Log[d + e*x]^2) + 2*e^2*f*(Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + 2*e^2*f*(Log[d + e*x]^2*Log[1
 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*e^2*g^2)
```

Maple [F] time = 1.504, size = 0, normalized size = 0.

$$\int \frac{x^3\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a^2\left(\frac{x^2}{g}-\frac{f\log\left(gx^2+f\right)}{g^2}\right)+\int \frac{b^2x^3\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^3\log\left((ex+d)^n\right)+\left(b^2\log(c)^2+2\,ab\log(\right.}{gx^2+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(x^2/g - f*log(g*x^2 + f)/g^2) + integrate((b^2*x^3*log((e*x + d)^n
)^2 + 2*(b^2*log(c) + a*b)*x^3*log((e*x + d)^n) + (b^2*log(c)^2 + 2*a*b*log
(c))*x^3)/(g*x^2 + f), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2x^3\log\left((ex+d)^nc\right)^2+2\,abx^3\log\left((ex+d)^nc\right)+a^2x^3}{gx^2+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*log((e*x + d)^n*c)^2 + 2*a*b*x^3*log((e*x + d)^n*c) + a^2
*x^3)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2 x^3}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^3/(g*x^2 + f), x)
```

3.312 $\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=317

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{b^2n^2\text{PolyL}}{}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*(a + b*Log[c*(d + e*x)^n])*P
olyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g + (b*n*(a + b
*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)])/g - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/g - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g
```

Rubi [A] time = 0.371215, antiderivative size = 317, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {2416, 2396, 2433, 2374, 6589}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g}-\frac{b^2n^2\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```


```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g) + (b*n*(a + b*Log[c*(d + e*x)^n])*P
olyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g + (b*n*(a + b
*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g]
)])/g - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))
])/g - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g
```


Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

```
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx$$

$$= -\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2\sqrt{g}}+\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}x}\,dx}{2\sqrt{g}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g}+\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2g}$$

Mathematica [C] time = 0.261377, size = 464, normalized size = 1.46

$$\frac{2bn\left(\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)+\log(d+ex)\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)\right)\right)(a+b\log}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] ((a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a
- b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[1 - (Sqrt[g]*
```

```
(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])]) + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] +
d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]) +
b^2*n^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqr
t[g])] + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g
])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqr
t[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqr
t[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2
*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/(2*g)
```

Maple [F] time = 1.071, size = 0, normalized size = 0.

$$\int \frac{x\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{gx^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^{2}\log\left(gx^{2}+f\right)}{2\,g}+\int \frac{b^{2}x\log\left(\left(ex+d\right)^{n}\right)^{2}+2\left(b^{2}\log\left(c\right)+ab\right)x\log\left(\left(ex+d\right)^{n}\right)+\left(b^{2}\log\left(c\right)^{2}+2\,ab\log\left(c\right)\right)x}{gx^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*log(g*x^2 + f)/g + integrate((b^2*x*log((e*x + d)^n)^2 + 2*(b^2*log
(c) + a*b)*x*log((e*x + d)^n) + (b^2*log(c)^2 + 2*a*b*log(c))*x)/(g*x^2 + f
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^{2}x\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\,abx\log\left(\left(ex+d\right)^{n}c\right)+a^{2}x}{gx^{2}+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x*log((e*x + d)^n*c)^2 + 2*a*b*x*log((e*x + d)^n*c) + a^2*x)/
(g*x^2 + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)^2}{f+gx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Integral(x*(a + b*log(c*(d + e*x)**n))**2/(f + g*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(ex+d\right)^n c\right)+a\right)^2 x}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x/(g*x^2 + f), x)
```

3.313 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)}\,dx$

Optimal. Leaf size=397

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{f}+\frac{2bn\text{PolyL}}{}$$

```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f - ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a
 + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*S
qrt[g])])/(2*f) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f - (b*n*(a + b*Log[c*(d + e*x)^n])*Pol
yLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f + (2*b*n*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f + (b^2*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f + (b^2*n^2*PolyLog[3, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d
])/f
```

Rubi [A] time = 0.596786, antiderivative size = 397, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {2416, 2396, 2433, 2374, 6589}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{f}-\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{f}+\frac{2bn\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)),x]
```


```
[Out] (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f - ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f) - ((a
 + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*S
qrt[g])])/(2*f) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f - (b*n*(a + b*Log[c*(d + e*x)^n])*Pol
yLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f + (2*b*n*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f + (b^2*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f + (b^2*n^2*PolyLog[3, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d
])/f
```


Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x(f+gx^2)}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{fx} - \frac{gx(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x}dx}{f} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{g\int \left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}(\sqrt{-f}-\sqrt{g}x)} + \frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}(\sqrt{-f}+\sqrt{g}x)}\right)dx}{f} -$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} + \frac{\sqrt{g}\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}dx}{2f} - \frac{\sqrt{g}\int \frac{(a+b\log(c(d+ex)^n}{\sqrt{-f}+\sqrt{g}x}}{2f}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+}{}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+}{}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+}{}$$

$$= \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f} - \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2f} - \frac{(a+}{}$$

Mathematica [C] time = 0.373632, size = 576, normalized size = 1.45

$$-\frac{2bn\left(\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)+\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)-2\left(\text{PolyLog}\left(2,\frac{ex}{d}+1\right)+\log\left(-\frac{ex}{d}\right)\log(d+ex)\right)+\log(d+e}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)),x]
```

```
[Out] -(-2*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + (a - b*n*Log[
d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] + Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*S
qrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*S
qrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*(L
og[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)/d])) + b^2*n^2*(-2*Log[-
((e*x)/d)]*Log[d + e*x]^2 + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] + Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(
I*e*Sqrt[f] + d*Sqrt[g])] - 4*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*Poly
```

```
Log[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 4*PolyLog[3, 1 + (e*x)/d]))/(
2*f)
```

Maple [F] time = 1.168, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x\left(gx^{2}+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}\,a^{2}\left(\frac{\log\left(gx^{2}+f\right)}{f}-\frac{2\,\log\left(x\right)}{f}\right)+\int \frac{b^{2}\log\left(\left(ex+d\right)^{n}\right)^{2}+b^{2}\log\left(c\right)^{2}+2\,ab\log\left(c\right)+2\left(b^{2}\log\left(c\right)+ab\right)\log\left(\left(ex+d\right)^{n}\right)}{gx^{3}+fx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(log(g*x^2 + f)/f - 2*log(x)/f) + integrate((b^2*log((e*x + d)^n)^
2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g
*x^3 + f*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\,ab\log\left(\left(ex+d\right)^{n}c\right)+a^{2}}{gx^{3}+fx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^3
 + f*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx^2+f\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x), x)
```

3.314 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)}\,dx$

Optimal. Leaf size=551

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{f^2}-\frac{2bgn\text{PolyLo}}{}$$

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))
/(d^2*f*x) - (a + b*Log[c*(d + e*x)^n])^2/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a
 + b*Log[c*(d + e*x)^n])^2)/f^2 + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(S
qrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2) + (g*(a + b*Log[c*
(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^2) - (b*e^2*n*(a + b*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/(d^2*f)
+ (b^2*e^2*n^2*PolyLog[2, d/(d + e*x)])/(d^2*f) + (b*g*n*(a + b*Log[c*(d +
e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 +
 (b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-
f] + d*Sqrt[g])])/f^2 - (2*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 +
(e*x)/d])/f^2 - (b^2*g*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d
*Sqrt[g]))])/f^2 - (b^2*g*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/f^2 + (2*b^2*g*n^2*PolyLog[3, 1 + (e*x)/d])/f^2
```

Rubi [A] time = 0.945639, antiderivative size = 575, normalized size of antiderivative = 1.04, number of steps used = 25, number of rules used = 14, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.483, Rules used = {2416, 2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2396, 2433, 2374, 6589}

$$\frac{bgn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{f^2}+\frac{bgn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{f^2}-\frac{2bgn\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)),x]
```

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))
/(d^2*f*x) - (b*e^2*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d^2*f) +
 (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*d^2*f) - (a + b*Log[c*(d + e*x)^n])^
2/(2*f*x^2) - (g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f^2 + (g*(a
+ b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sq
rt[g])])/(2*f^2) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[
g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) + (b*g*n*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b*g*
n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d
*Sqrt[g])])/f^2 - (b^2*e^2*n^2*PolyLog[2, 1 + (e*x)/d])/(d^2*f) - (2*b*g*n*
(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f^2 - (b^2*g*n^2*PolyLo
g[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 - (b^2*g*n^2*Pol
yLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 + (2*b^2*g*n^2*P
olyLog[3, 1 + (e*x)/d])/f^2
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
```

```
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)}dx = \int\left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^3} - \frac{g(a+b\log(c(d+ex)^n))^2}{f^2x} + \frac{g^2x(a+b\log(c(d+ex)^n}{f^2(f+gx^2)}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3}dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{x}dx}{f^2} + \frac{g^2\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{f^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{g^2\int\left(-\frac{(a+b\log(c(d}{2\sqrt{g}(\sqrt{-f}-\right.}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{g^{3/2}\int \frac{(a+b\log(c(d+e}{\sqrt{-f}-\sqrt{g}}}{2f^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{g(a+b\log(c(d+}{}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{(a+b\log(c(d+ex)^n))^2}{2fx^2} - \frac{g\log\left(-\frac{ex}{d}\right)(a+b\,l}{f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{d^2f}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2fx} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{d^2f}$$

Mathematica [C] time = 0.721668, size = 811, normalized size = 1.47

$$\frac{b^2\left(d^2g\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log^2(d+ex)+2\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log(d+ex)-2\text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\right)x^2+d^2g\left(\text{lo}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)),x]
```

```
[Out] (-(d^2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2) - 2*d^2*g*x^2*Log
[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d^2*g*x^2*(a - b*n*Lo
g[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] - 2*b*n*(a - b*n*Log[d
+ e*x] + b*Log[c*(d + e*x)^n])*(f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^2*x^2)
*Log[d + e*x]) - d^2*g*x^2*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] -
 I*d*Sqrt[g])]) - d^2*g*x^2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(
e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I
*d*Sqrt[g])]) + 2*d^2*g*x^2*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 +
(e*x)/d])) + b^2*n^2*(f*(2*e^2*x^2*Log[x] - Log[d + e*x]*(2*e^2*x^2*Log[-((
e*x)/d)] + (d + e*x)*(2*e*x + (d - e*x)*Log[d + e*x])) - 2*e^2*x^2*PolyLog[
2, 1 + (e*x)/d]) + d^2*g*x^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((
```

```
-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))
/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])]) + d^2*g*x^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[
f] + d*Sqrt[g])]) - 2*d^2*g*x^2*(Log[-((e*x)/d)]*Log[d + e*x]^2 + 2*Log[d +
 e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d])))/(2*d^2*f^2*x^2
)
```

Maple [F] time = 1.353, size = 0, normalized size = 0.

$$\int \frac{\left(a + b\ln\left(c\,(ex+d)^n\right)\right)^2}{x^3\left(gx^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,a^2\left(\frac{g\log\left(gx^2+f\right)}{f^2} - \frac{2\,g\log\left(x\right)}{f^2} - \frac{1}{fx^2}\right) + \int \frac{b^2\log\left((ex+d)^n\right)^2 + b^2\log\left(c\right)^2 + 2\,ab\log\left(c\right) + 2\left(b^2\log\left(c\right)+ab\right)\log\left((e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(g*log(g*x^2 + f)/f^2 - 2*g*log(x)/f^2 - 1/(f*x^2)) + integrate((b^
2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*b)*l
og((e*x + d)^n))/(g*x^5 + f*x^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{gx^5+fx^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^5
 + f*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**3/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx^2+f\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x^3), x)
```

3.315 $\int \frac{x^4(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=701

$$-\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^{5/2}}+\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^{5/2}}+$$

```
[Out] (2*a*b*f*n*x)/g^2 - (2*b^2*f*n^2*x)/g^2 + (2*b^2*d^2*n^2*x)/(e^2*g) - (b^2*
d*n^2*(d + e*x)^2)/(2*e^3*g) + (2*b^2*n^2*(d + e*x)^3)/(27*e^3*g) - (b^2*d^
3*n^2*Log[d + e*x]^2)/(3*e^3*g) + (2*b^2*f*n*(d + e*x)*Log[c*(d + e*x)^n])/
(e*g^2) - (2*b*d^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(e^3*g) + (b*d*n
*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(e^3*g) - (2*b*n*(d + e*x)^3*(a +
b*Log[c*(d + e*x)^n]))/(9*e^3*g) + (2*b*d^3*n*Log[d + e*x]*(a + b*Log[c*(d
+ e*x)^n]))/(3*e^3*g) + (x^3*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) - (f*(d +
e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) + ((-f)^(3/2)*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(
5/2)) - ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]
*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(5/2)) - (b*(-f)^(3/2)*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
g^(5/2) + (b*(-f)^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(5/2) + (b^2*(-f)^(3/2)*n^2*PolyLog[3
, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(5/2) - (b^2*(-f)^(3/
2)*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(5/2)
```

Rubi [A] time = 0.921698, antiderivative size = 646, normalized size of antiderivative = 0.92, number of steps used = 23, number of rules used = 16, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.552, Rules used = {2416, 2389, 2296, 2295, 2398, 2411, 43, 2334, 12, 14, 2301, 2409, 2396, 2433, 2374, 6589}

$$-\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^{5/2}}+\frac{b(-f)^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^{5/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (2*a*b*f*n*x)/g^2 - (2*b^2*f*n^2*x)/g^2 + (2*b^2*d^2*n^2*x)/(e^2*g) - (b^2*
d*n^2*(d + e*x)^2)/(2*e^3*g) + (2*b^2*n^2*(d + e*x)^3)/(27*e^3*g) - (b^2*d^
3*n^2*Log[d + e*x]^2)/(3*e^3*g) + (2*b^2*f*n*(d + e*x)*Log[c*(d + e*x)^n])/
(e*g^2) - (b*n*((18*d^2*(d + e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*
x)^3)/e^3 - (6*d^3*Log[d + e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/(9*g) + (
x^3*(a + b*Log[c*(d + e*x)^n])^2)/(3*g) - (f*(d + e*x)*(a + b*Log[c*(d + e*
x)^n])^2)/(e*g^2) + ((-f)^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-
f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(5/2)) - ((-f)^(3/2)*(a +
b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt
[g])])/(2*g^(5/2)) - (b*(-f)^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2,
-((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(5/2) + (b*(-f)^(3/2)*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/g^(5/2) + (b^2*(-f)^(3/2)*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(
e*Sqrt[-f] - d*Sqrt[g]))])/g^(5/2) - (b^2*(-f)^(3/2)*n^2*PolyLog[3, (Sqrt[g
]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(5/2)
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4 (a + b\log (c(d + ex)^n))^2}{f + gx^2} dx = \int \left(-\frac{f (a + b\log (c(d + ex)^n))^2}{g^2} + \frac{x^2 (a + b\log (c(d + ex)^n))^2}{g} + \frac{f^2 (a + b\log (c(d}{g^2 \left(f + gx^2\right.}\right.$$

$$= -\frac{f \int (a + b\log (c(d + ex)^n))^2\, dx}{g^2} + \frac{f^2 \int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2} dx}{g^2} + \frac{\int x^2 (a + b\log (c(a}{g}$$

$$= \frac{x^3 (a + b\log (c(d + ex)^n))^2}{3g} - \frac{f\,\mathrm{Subst}\left(\int (a + b\log (cx^n))^2\, dx, x, d + ex\right)}{eg^2} + \frac{f^2 \int \left(\right.}{}$$

$$= \frac{x^3 (a + b\log (c(d + ex)^n))^2}{3g} - \frac{f(d + ex) (a + b\log (c(d + ex)^n))^2}{eg^2} - \frac{(-f)^{3/2} \int \frac{(a+b\log}{\sqrt{}}}{2g^2}$$

$$= \frac{2abfnx}{g^2} - \frac{bn \left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3} - \frac{6d^3\log(d+ex)}{e^3}\right) (a + b\log (c(d + ex)^n)}{9g}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2fn(d + ex)\log (c(d + ex)^n)}{eg^2} - \frac{bn \left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \right.}{}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2fn(d + ex)\log (c(d + ex)^n)}{eg^2} - \frac{bn \left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \right.}{}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2d^2n^2x}{e^2g} - \frac{b^2dn^2(d + ex)^2}{2e^3g} + \frac{2b^2n^2(d + ex)^3}{27e^3g} + \frac{2b^2fn(d +}{}$$

$$= \frac{2abfnx}{g^2} - \frac{2b^2fn^2x}{g^2} + \frac{2b^2d^2n^2x}{e^2g} - \frac{b^2dn^2(d + ex)^2}{2e^3g} + \frac{2b^2n^2(d + ex)^3}{27e^3g} - \frac{b^2d^3n^2\log}{3e^3}$$

Mathematica [C] time = 0.901115, size = 821, normalized size = 1.17

$$\frac{18g^{3/2}x^3 (a - bn\log(d + ex) + b\log (c(d + ex)^n))^2 e^3 - 54f\sqrt{g}x (a - bn\log(d + ex) + b\log (c(d + ex)^n))^2 e^3 + 54f^{3/2}\,\mathrm{ta}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-54*e^3*f*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 18*e
^3*g^(3/2)*x^3*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 54*e^3*f^(
3/2)*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
n])^2 + 6*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(-18*e^2*f*Sqrt
[g]*(d + e*x)*(-1 + Log[d + e*x]) + g^(3/2)*(e*x*(-6*d^2 + 3*d*e*x - 2*e^2*
x^2) + 6*(d^3 + e^3*x^3)*Log[d + e*x]) + (9*I)*e^3*f^(3/2)*(Log[d + e*x]*Lo
g[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[
g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - (9*I)*e^3*f^(3/2)*(Log[d + e
*x]*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sq
rt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])) + b^2*n^2*(-54*e^2*f*Sqrt[g]*
```

```
(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d + e*x)*Log[d + e*x]^2) + g^(3/2)*(e*
x*(66*d^2 - 15*d*e*x + 4*e^2*x^2) - 6*(11*d^3 + 6*d^2*e*x - 3*d*e^2*x^2 + 2
*e^3*x^3)*Log[d + e*x] + 18*(d^3 + e^3*x^3)*Log[d + e*x]^2) + (27*I)*e^3*f^
(3/2)*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[
g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sq
rt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) -
 (27*I)*e^3*f^(3/2)*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f
] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f
] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g]
)])))/(54*e^3*g^(5/2))
```

Maple [F] time = 7.023, size = 0, normalized size = 0.

$$\int \frac{x^4 \left(a + b\ln\left(c\left(ex+d\right)^n\right)\right)^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2x^4\log\left(\left(ex+d\right)^nc\right)^2 + 2\,abx^4\log\left(\left(ex+d\right)^nc\right) + a^2x^4}{gx^2+f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*log((e*x + d)^n*c)^2 + 2*a*b*x^4*log((e*x + d)^n*c) + a^2
*x^4)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2 x^4}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^4/(g*x^2 + f), x)
```

3.316 $\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=447

$$-\frac{b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{b^2\sqrt{\ }}{}$$

```
[Out] (-2*a*b*n*x)/g + (2*b^2*n^2*x)/g - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n])/(
e*g) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + (Sqrt[-f]*(a + b*Lo
g[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^(3/2) + (b*Sqrt[-f]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2) + (b^2*Sqrt[-f]*n^2*PolyLog[
3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(3/2) - (b^2*Sqrt[-f
]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2)
```

Rubi [A] time = 0.592132, antiderivative size = 447, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.31, Rules used = {2416, 2389, 2296, 2295, 2409, 2396, 2433, 2374, 6589}

$$-\frac{b\sqrt{-f}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{b\sqrt{-f}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^{3/2}}+\frac{b^2\sqrt{\ }}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (-2*a*b*n*x)/g + (2*b^2*n^2*x)/g - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n])/(
e*g) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g) + (Sqrt[-f]*(a + b*Lo
g[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])
])/(2*g^(3/2)) - (Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^(3/2)) - (b*Sqrt[-f]*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^(3/2) + (b*Sqrt[-f]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2) + (b^2*Sqrt[-f]*n^2*PolyLog[
3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^(3/2) - (b^2*Sqrt[-f
]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^(3/2)
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2 (a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int\left(\frac{(a+b\log(c(d+ex)^n))^2}{g} - \frac{f(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int (a+b\log(c(d+ex)^n))^2\,dx}{g} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g}$$

$$= \frac{\text{Subst}\left(\int (a+b\log(cx^n))^2\,dx, x, d+ex\right)}{eg} - \frac{f\int\left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d\cdots}{2f(\sqrt{-f}+\sqrt{g}\cdots}\right.}{g}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg} - \frac{\sqrt{-f}\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2g} - \frac{\sqrt{-f}\int \frac{(a+b\log(c(d+ex)\cdots}{\sqrt{-f}+\sqrt{g}x}}{2g}$$

$$= -\frac{2abnx}{g} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-\cdots}}{e\sqrt{-\cdots}}\right.}{2g^{3/2}}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg}$$

$$= -\frac{2abnx}{g} + \frac{2b^2n^2x}{g} - \frac{2b^2n(d+ex)\log(c(d+ex)^n)}{eg} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{eg}$$

Mathematica [C] time = 0.619696, size = 623, normalized size = 1.39

$$\frac{ibn\left(-e\sqrt{f}\left(\text{PolyLog}\left(2, \frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right) + \log(d+ex)\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\right) + e\sqrt{f}\left(\text{PolyLog}\left(2, \frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right) + \log(d+ex)\log\left(1\cdots\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2),x]
```

```
[Out] (e*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - e*Sqrt[f]*Ar
cTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 +
 I*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((-2*I)*Sqrt[g]*(d + e
*x)*(-1 + Log[d + e*x]) - e*Sqrt[f]*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x
))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])]) + e*Sqrt[f]*(Log[d + e*x]*Log[1 - (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] + PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] +
 d*Sqrt[g])])) + b^2*n^2*(Sqrt[g]*(2*e*x - 2*(d + e*x)*Log[d + e*x] + (d +
e*x)*Log[d + e*x]^2) - (I/2)*e*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d
+ e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*
(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))
/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (I/2)*e*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (
Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (
Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d +
```

```
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))))/(e*g^(3/2))
```

Maple [F] time = 12.529, size = 0, normalized size = 0.

$$\int \frac{x^2 \left(a + b \ln \left(c \left(ex + d\right)^n\right)\right)^2}{g x^2 + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2 x^2 \log \left(\left(ex + d\right)^n c\right)^2 + 2\, a b x^2 \log \left(\left(ex + d\right)^n c\right) + a^2 x^2}{g x^2 + f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*log((e*x + d)^n*c)^2 + 2*a*b*x^2*log((e*x + d)^n*c) + a^2
*x^2)/(g*x^2 + f), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2 x^2}{gx^2+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^2/(g*x^2 + f), x)
```

3.317 $\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx$

Optimal. Leaf size=371

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}\sqrt{g}}+\frac{b^2n^2\text{PolyI}}{}$$

```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(S
qrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*
n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
 d*Sqrt[g]))])/(Sqrt[-f]*Sqrt[g]) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(Sqrt[-f]*Sqrt[g]) + (b^
2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(Sqrt[-f
]*Sqrt[g]) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(Sqrt[-f]*Sqrt[g])
```

Rubi [A] time = 0.375506, antiderivative size = 371, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {2409, 2396, 2433, 2374, 6589}

$$-\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}\sqrt{g}}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{\sqrt{-f}\sqrt{g}}+\frac{b^2n^2\text{PolyI}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2),x]
```


```
[Out] ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(S
qrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*Sqrt[-f]*Sqrt[g]) - (b*
n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
 d*Sqrt[g]))])/(Sqrt[-f]*Sqrt[g]) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog
[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(Sqrt[-f]*Sqrt[g]) + (b^
2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(Sqrt[-f
]*Sqrt[g]) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(Sqrt[-f]*Sqrt[g])
```


Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx = \int \left(\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}-\sqrt{g}x\right)}+\frac{\sqrt{-f}\,(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}+\sqrt{g}x\right)}\right)dx$$

$$= -\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{2\sqrt{-f}}-\frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}x}\,dx}{2\sqrt{-f}}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-$$

$$= \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-\frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}+\sqrt{g}x\right)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}\sqrt{g}}-$$

Mathematica [C] time = 0.326122, size = 485, normalized size = 1.31

$$ibn\left(\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)-\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)+\log(d+ex)\left(\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)-\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)\right)\right)(a+b\log($$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2),x]
```

```
[Out] (ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2 + I*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(Log[d + e*x]*(Log[
1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - Log[1 - (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]) + PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)
*e*Sqrt[f] + d*Sqrt[g])] - PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*
Sqrt[g])]) + (I/2)*b^2*n^2*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(
I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f
] + d*Sqrt[g])] + 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g]
)]))/(Sqrt[f]*Sqrt[g])
```

Maple [F] time = 3.872, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{gx^{2}+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\,ab\log\left(\left(ex+d\right)^{n}c\right)+a^{2}}{gx^{2}+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^2
 + f), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)^{2}}{f + gx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f),x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))**2/(f + g*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(ex + d\right)^{n}c\right) + a\right)^{2}}{gx^{2} + f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x^2 + f), x)
```

3.318 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)}\,dx$

Optimal. Leaf size=461

$$-\frac{b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}}+\frac{b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}}+b^2$$

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f) - ((d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/(d*f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*
Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) -
(Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])])/(2*(-f)^(3/2)) - (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(3/2)
+ (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])
/(d*f) + (b^2*Sqrt[g]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*
Sqrt[g]))])/(-f)^(3/2) - (b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2)
```

Rubi [A] time = 0.633778, antiderivative size = 461, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.31, Rules used = {2416, 2397, 2394, 2315, 2409, 2396, 2433, 2374, 6589}

$$-\frac{b\sqrt{g}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}}+\frac{b\sqrt{g}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{3/2}}+b^2$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)),x]
```

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f) - ((d + e*x)*(a
+ b*Log[c*(d + e*x)^n])^2)/(d*f*x) + (Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*
Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)) -
(Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqr
t[-f] - d*Sqrt[g])])/(2*(-f)^(3/2)) - (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(3/2)
+ (b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])
/(d*f) + (b^2*Sqrt[g]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*
Sqrt[g]))])/(-f)^(3/2) - (b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e
*Sqrt[-f] + d*Sqrt[g])])/(-f)^(3/2)
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
```

```
- d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)}\,dx = \int\left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2}dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{f}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} - \frac{g\int\left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}+\sqrt{g}x)}\right.}{f}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} - \frac{g\int \frac{(a+b\,l}{}}{2}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} + \frac{\sqrt{g}(a+}{}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} + \frac{\sqrt{g}(a+}{}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} + \frac{\sqrt{g}(a+}{}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{dfx} + \frac{\sqrt{g}(a+}{}$$

Mathematica [C] time = 0.494154, size = 668, normalized size = 1.45

$$\frac{2bn\left(id\sqrt{g}x\left(\text{PolyLog}\left(2,-\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}-id\sqrt{g}}\right)+\log(d+ex)\log\left(\frac{e(\sqrt{f}+i\sqrt{g}x)}{e\sqrt{f}-id\sqrt{g}}\right)\right)-id\sqrt{g}x\left(\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)+\log(d+ex)\,\mathrm{l}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)),x]
```

```
[Out] (-2*d*Sqrt[f]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*d*Sqrt[g]
*x*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]
)^2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(2*Sqrt[f]*(e*x*L
og[x] - (d + e*x)*Log[d + e*x]) + I*d*Sqrt[g]*x*(Log[d + e*x]*Log[(e*(Sqrt[
f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d
 + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - I*d*Sqrt[g]*x*(Log[d + e*x]*Log[(e*(
Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*
(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*(2*Sqrt[f]*(2*e*x*Log[-((
e*x)/d)]*Log[d + e*x] - (d + e*x)*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*
x)/d]) - I*d*Sqrt[g]*x*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*
Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)
*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f]
 + d*Sqrt[g])]) + I*d*Sqrt[g]*x*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))
/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
```

```
 + d*Sqrt[g])]))))/(2*d*f^(3/2)*x)
```

Maple [F] time = 20.142, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x^{2}\left(gx^{2}+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}+2\,ab\log\left(\left(ex+d\right)^{n}c\right)+a^{2}}{gx^{4}+fx^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^4
 + f*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**2/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx^2+f\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x^2), x)
```

3.319 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^4(f+gx^2)}\,dx$

Optimal. Leaf size=694

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{5/2}}-\frac{2b^2e^3}{}$$

```
[Out] -(b^2*e^2*n^2)/(3*d^2*f*x) - (b^2*e^3*n^2*Log[x])/(d^3*f) + (b^2*e^3*n^2*Lo
g[d + e*x])/(3*d^3*f) - (b*e*n*(a + b*Log[c*(d + e*x)^n]))/(3*d*f*x^2) + (2
*b*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*f*x) - (2*b*e*g*n*Log
[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - (a + b*Log[c*(d + e*x)^n
])^2/(3*f*x^3) + (g*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g^
(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-
f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Lo
g[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*(-f)^(5/2)) + (2
*b*e^3*n*(a + b*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/(3*d^3*f) - (2*b^
2*e^3*n^2*PolyLog[2, d/(d + e*x)])/(3*d^3*f) - (b*g^(3/2)*n*(a + b*Log[c*(d
 + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-
f)^(5/2) + (b*g^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d +
 e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) - (2*b^2*e*g*n^2*PolyLog[2, 1
+ (e*x)/d])/(d*f^2) + (b^2*g^(3/2)*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) - (b^2*g^(3/2)*n^2*PolyLog[3, (Sqrt[g]*
(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2)
```

Rubi [A] time = 1.11448, antiderivative size = 717, normalized size of antiderivative = 1.03, number of steps used = 28, number of rules used = 20, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.69, Rules used = {2416, 2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44, 2397, 2394, 2315, 2409, 2396, 2433, 2374, 6589}

$$-\frac{bg^{3/2}n\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{5/2}}+\frac{bg^{3/2}n\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{(-f)^{5/2}}+\frac{2b^2e^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^4*(f + g*x^2)),x]
```

```
[Out] -(b^2*e^2*n^2)/(3*d^2*f*x) - (b^2*e^3*n^2*Log[x])/(d^3*f) + (b^2*e^3*n^2*Lo
g[d + e*x])/(3*d^3*f) - (b*e*n*(a + b*Log[c*(d + e*x)^n]))/(3*d*f*x^2) + (2
*b*e^2*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*f*x) + (2*b*e^3*n*Log
[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*f) - (2*b*e*g*n*Log[-((e*x)
/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - (e^3*(a + b*Log[c*(d + e*x)^n])^
2)/(3*d^3*f) - (a + b*Log[c*(d + e*x)^n])^2/(3*f*x^3) + (g*(d + e*x)*(a + b
*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*L
og[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(5/2)) - (
g^(3/2)*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt
[-f] - d*Sqrt[g])])/(2*(-f)^(5/2)) - (b*g^(3/2)*n*(a + b*Log[c*(d + e*x)^n]
)*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/2) +
 (b*g^(3/2)*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] + d*Sqrt[g])])/(-f)^(5/2) + (2*b^2*e^3*n^2*PolyLog[2, 1 + (e*x)/d]
)/(3*d^3*f) - (2*b^2*e*g*n^2*PolyLog[2, 1 + (e*x)/d])/(d*f^2) + (b^2*g^(3/2
)*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(-f)^(5/
2) - (b^2*g^(3/2)*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g
])])/(-f)^(5/2)
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
```

] && EqQ[r*(q + 1) + 1, 0]

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^4(f+gx^2)}\,dx = \int\left(\frac{(a+b\log(c(d+ex)^n))^2}{fx^4} - \frac{g(a+b\log(c(d+ex)^n))^2}{f^2x^2} + \frac{g^2(a+b\log(c(d+ex)^n)}{f^2(f+gx^2)}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^4}\,dx}{f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2}\,dx}{f^2} + \frac{g^2\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{f^2}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{3fx^3} + \frac{g(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g^2\int\left(\frac{\sqrt{-f}(a+b\log(c(d\cdot}{2f(\sqrt{-f}-\sqrt{g}\right.}{}$$

$$= -\frac{2begn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(a+b\log(c(d+ex)^n))^2}{3fx^3} + \frac{g(d+ex)(a+}{}$$

$$= -\frac{2begn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(a+b\log(c(d+ex)^n))^2}{3fx^3} + \frac{g(d+ex)(a+}{}$$

$$= -\frac{ben(a+b\log(c(d+ex)^n))}{3dfx^2} - \frac{2begn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(a+b\log(}{3}$$

$$= -\frac{ben(a+b\log(c(d+ex)^n))}{3dfx^2} + \frac{2be^2n(d+ex)(a+b\log(c(d+ex)^n))}{3d^3fx} - \frac{2begn\log\left(-\right.}{}$$

$$= -\frac{b^2e^2n^2}{3d^2fx} - \frac{b^2e^3n^2\log(x)}{d^3f} + \frac{b^2e^3n^2\log(d+ex)}{3d^3f} - \frac{ben(a+b\log(c(d+ex)^n))}{3dfx^2} + \frac{2be^2n}{}$$

$$= -\frac{b^2e^2n^2}{3d^2fx} - \frac{b^2e^3n^2\log(x)}{d^3f} + \frac{b^2e^3n^2\log(d+ex)}{3d^3f} - \frac{ben(a+b\log(c(d+ex)^n))}{3dfx^2} + \frac{2be^2n}{}$$

Mathematica [C] time = 0.791029, size = 930, normalized size = 1.34

$$6\sqrt{f}gx^2\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2d^3-2f^{3/2}\left(a-bn\log(d+ex)+b\log\left(c(d+ex)^n\right)\right)^2d^3+6g^{3/2}x^3\tan^{-1}\Big($$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^4*(f + g*x^2)),x]
```

```
[Out] (-2*d^3*f^(3/2)*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 6*d^3*Sqr
t[f]*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 6*d^3*g^(3/2)*
x^3*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])^2 + (2*I)*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((6*I)*d^2*S
qrt[f]*g*x^2*(e*x*Log[x] - (d + e*x)*Log[d + e*x]) + I*f^(3/2)*(d*e*x*(d -
2*e*x) - 2*e^3*x^3*Log[x] + 2*(d^3 + e^3*x^3)*Log[d + e*x]) - 3*d^3*g^(3/2)
*x^3*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g]
)] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 3*d^
3*g^(3/2)*x^3*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*
d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))
 + I*b^2*n^2*((6*I)*d^2*Sqrt[f]*g*x^2*(2*e*x*Log[-((e*x)/d)]*Log[d + e*x] -
 (d + e*x)*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*x)/d]) + (2*I)*f^(3/2)*
(d*e^2*x^2 + 3*e^3*x^3*Log[x] + d^2*e*x*Log[d + e*x] - 2*d*e^2*x^2*Log[d +
e*x] - 3*e^3*x^3*Log[d + e*x] - 2*e^3*x^3*Log[-((e*x)/d)]*Log[d + e*x] + d^
3*Log[d + e*x]^2 + e^3*x^3*Log[d + e*x]^2 - 2*e^3*x^3*PolyLog[2, 1 + (e*x)/
d]) + 3*d^3*g^(3/2)*x^3*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e
*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I
)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f
] + d*Sqrt[g])]) - 3*d^3*g^(3/2)*x^3*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d +
e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sq
rt[f] + d*Sqrt[g])])))/(6*d^3*f^(5/2)*x^3)
```

Maple [F] time = 9.815, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}{x^4\left(gx^2+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2 \log\left((ex+d)^n c\right)^2 + 2\,ab \log\left((ex+d)^n c\right) + a^2}{gx^6 + fx^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g*x^6
 + f*x^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**4/(g*x**2+f),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log\left((ex+d)^n c\right) + a\right)^2}{\left(gx^2 + f\right)x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^4/(g*x^2+f),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)*x^4), x)
```

3.320 $\int \frac{x^5(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2} dx$

Optimal. Leaf size=936

result too large to display

```
[Out] (2*a*b*d*n*x)/(e*g^2) - (2*b^2*d*n^2*x)/(e*g^2) + (b^2*n^2*(d + e*x)^2)/(4*
e^2*g^2) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g^2) - (b*n*(d + e
*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g^2) + (e^2*f^2*(a + b*Log[c*(d +
e*x)^n])^2)/(2*g^3*(e^2*f + d^2*g)) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g^2) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g^2) -
(f^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^3*(f + g*x^2)) - (b*e*f*(e*f + d*Sq
rt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)) - (f*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 -
(b*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)
) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[
-f] - d*Sqrt[g])])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n^2*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3*(e^2*f + d
^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x
))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] - d*Sqrt
[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(
e^2*f + d^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 + (2*b^2*f*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (2*b^2*f*n^2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3
```

Rubi [A] time = 1.52967, antiderivative size = 936, normalized size of antiderivative = 1., number of steps used = 34, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.621, Rules used = {2416, 2401, 2389, 2296, 2295, 2390, 2305, 2304, 2413, 2418, 2301, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{n^2(d+ex)^2b^2}{4e^2g^2} - \frac{2dn^2xb^2}{eg^2} + \frac{2dn(d+ex)\log\left(c(d+ex)^n\right)b^2}{e^2g^2} - \frac{e(-f)^{3/2}\left(\sqrt{g}d+e\sqrt{-f}\right)n^2\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)b^2}{2g^3\left(gd^2+e^2f\right)} - e($$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```


```
[Out] (2*a*b*d*n*x)/(e*g^2) - (2*b^2*d*n^2*x)/(e*g^2) + (b^2*n^2*(d + e*x)^2)/(4*
e^2*g^2) + (2*b^2*d*n*(d + e*x)*Log[c*(d + e*x)^n])/(e^2*g^2) - (b*n*(d + e
*x)^2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2*g^2) + (e^2*f^2*(a + b*Log[c*(d +
e*x)^n])^2)/(2*g^3*(e^2*f + d^2*g)) - (d*(d + e*x)*(a + b*Log[c*(d + e*x)^n
])^2)/(e^2*g^2) + ((d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2*g^2) -
(f^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^3*(f + g*x^2)) - (b*e*f*(e*f + d*Sq
rt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)) - (f*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 -
(b*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^3*(e^2*f + d^2*g)
) - (f*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[
-f] - d*Sqrt[g])])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] + d*Sqrt[g])*n^2*Pol
yLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^3*(e^2*f + d
```

```
^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x
))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 - (b^2*e*(-f)^(3/2)*(e*Sqrt[-f] - d*Sqrt
[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^3*(
e^2*f + d^2*g)) - (2*b*f*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3 + (2*b^2*f*n^2*PolyLog[3, -((Sqrt[
g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g^3 + (2*b^2*f*n^2*PolyLog[3, (Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^3
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
```

```
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^5 (a+b\log(c(d+ex)^n))^2}{\left(f+gx^2\right)^2}\,dx = \int \left(\frac{x(a+b\log(c(d+ex)^n))^2}{g^2} + \frac{f^2x(a+b\log(c(d+ex)^n))^2}{g^2\left(f+gx^2\right)^2} - \frac{2fx(a+b\log(c(d\right.$$

$$= \frac{\int x(a+b\log(c(d+ex)^n))^2\,dx}{g^2} - \frac{(2f)\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{g^2} + \frac{f^2\int \frac{x(a+b\log(c(d+e}{\left(f+gx^2\right)^2}}{g^2}$$

$$= -\frac{f^2(a+b\log(c(d+ex)^n))^2}{2g^3\left(f+gx^2\right)} + \frac{\int \left(-\frac{d(a+b\log(c(d+ex)^n))^2}{e} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{e}\right)dx}{g^2}$$

$$= -\frac{f^2(a+b\log(c(d+ex)^n))^2}{2g^3\left(f+gx^2\right)} + \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}\,dx}{g^{5/2}} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}x}\,dx}{g^{5/2}}$$

$$= -\frac{f^2(a+b\log(c(d+ex)^n))^2}{2g^3\left(f+gx^2\right)} - \frac{f(a+b\log(c(d+ex)^n))^2\log\left(\frac{e\left(\sqrt{-f}-\sqrt{g}x\right)}{e\sqrt{-f}+d\sqrt{g}}\right)}{g^3} - \frac{f(a}{}$$

$$= -\frac{d(d+ex)(a+b\log(c(d+ex)^n))^2}{e^2g^2} + \frac{(d+ex)^2(a+b\log(c(d+ex)^n))^2}{2e^2g^2} - \frac{f^2(a+}{2}$$

$$= \frac{2abdnx}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} - \frac{bn(d+ex)^2(a+b\log(c(d+ex)^n))}{2e^2g^2} + \frac{e^2f^2(a+b\log(c}{2g^3\left(e^2f+\right.}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g^2} - \frac{bn(d+ex}{}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g^2} - \frac{bn(d+ex}{}$$

$$= \frac{2abdnx}{eg^2} - \frac{2b^2dn^2x}{eg^2} + \frac{b^2n^2(d+ex)^2}{4e^2g^2} + \frac{2b^2dn(d+ex)\log(c(d+ex)^n)}{e^2g^2} - \frac{bn(d+ex}{}$$

Mathematica [C] time = 2.7655, size = 1254, normalized size = 1.34

$$b^2\left(\frac{i\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)\right)f^{3/2}}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)}-\frac{\left(\log(d+ex)\left(2e\left(i\sqrt{g}x+\sqrt{f}\right)\log\left(\frac{e\left(i\sqrt{g}x+\sqrt{f}\right.}{e\sqrt{f}-id\sqrt{g}}\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (2*g*x^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - (2*f^2*(a - b*n*
Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 4*f*(a - b*n*Log[d +
e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x]
 + b*Log[c*(d + e*x)^n])*((g*(e*x*(2*d - e*x) - 2*(d^2 - e^2*x^2)*Log[d + e
*x]))/e^2 + (f^(3/2)*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] - e*(Sqrt[f] + I*Sqr
t[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] +
I*Sqrt[g]*x)) + (I*f^(3/2)*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f
] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqr
t[f] - I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] -
 I*d*Sqrt[g])]) - 4*f*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt
[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqr
t[g])])) + b^2*n^2*((g*(e*x*(-6*d + e*x) + (6*d^2 + 4*d*e*x - 2*e^2*x^2)*Lo
g[d + e*x] - 2*(d^2 - e^2*x^2)*Log[d + e*x]^2))/e^2 + (I*f^(3/2)*(-(Sqrt[g]
*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(
e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sq
rt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*
Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (f^(3/2)*(Log[d + e*x]*((
-I)*Sqrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sq
rt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g
]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f
] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) - 4*f*(Log[d + e*x]^2*Log[1 - (Sq
rt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2,
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(
d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - 4*f*(Log[d + e*x]^2*Log[1 - (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*g^3)
```

Maple [F] time = 1.707, size = 0, normalized size = 0.

$$\int \frac{x^5\left(a+b\ln\left(c\,(ex+d)^n\right)\right)^2}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^5*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}a^2\left(\frac{f^2}{g^4x^2+fg^3}-\frac{x^2}{g^2}+\frac{2f\log\left(gx^2+f\right)}{g^3}\right)+\int\frac{b^2x^5\log\left((ex+d)^n\right)^2+2\left(b^2\log(c)+ab\right)x^5\log\left((ex+d)^n\right)+\left(b^2\log(\right.}{g^2x^4+2fgx^2+f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(f^2/(g^4*x^2 + f*g^3) - x^2/g^2 + 2*f*log(g*x^2 + f)/g^3) + integ
rate((b^2*x^5*log((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^5*log((e*x + d)^n
) + (b^2*log(c)^2 + 2*a*b*log(c))*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2x^5\log\left((ex+d)^nc\right)^2+2\,abx^5\log\left((ex+d)^nc\right)+a^2x^5}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^5*log((e*x + d)^n*c)^2 + 2*a*b*x^5*log((e*x + d)^n*c) + a^2
*x^5)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^5}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^5/(g*x^2 + f)^2, x)
```

3.321 $\int \frac{x^3(a+b\log(c(d+ex)^n))^2}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=739

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{b^2e\sqrt{-f}n^2\left(d\sqrt{\ }\right.}{\ }$$

```
[Out] -(e^2*f*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*L
og[c*(d + e*x)^n])^2)/(2*g^2*(f + g*x^2)) + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])
*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + (b*e*(e*f - d
*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*
x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d +
 e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^
2) - (b^2*e*Sqrt[-f]*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^2 + (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*Log[c
*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^
2 - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g
^2 - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^2
```

Rubi [A] time = 1.19512, antiderivative size = 739, normalized size of antiderivative = 1., number of steps used = 25, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2416, 2413, 2418, 2390, 2301, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{bn\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{g^2}+\frac{bn\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)(a+b\log(c(d+ex)^n))}{g^2}-\frac{b^2e\sqrt{-f}n^2\left(d\sqrt{\ }\right.}{\ }$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```


```
[Out] -(e^2*f*(a + b*Log[c*(d + e*x)^n])^2)/(2*g^2*(e^2*f + d^2*g)) + (f*(a + b*L
og[c*(d + e*x)^n])^2)/(2*g^2*(f + g*x^2)) + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])
*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e
*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2) + (b*e*(e*f - d
*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*
x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + ((a + b*Log[c*(d +
 e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*g^
2) - (b^2*e*Sqrt[-f]*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sqrt[g]*(d
+ e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]
))])/g^2 + (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e
*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^2*(e^2*f + d^2*g)) + (b*n*(a + b*Log[c
*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^
2 - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/g
^2 - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/g^2
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3 (a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(-\frac{fx(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)^2} + \frac{x(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right) dx$$

$$= \frac{\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{g} - \frac{f\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}dx}{g}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{\int\left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}(\sqrt{-f}-\sqrt{g}x)} + \frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}(\sqrt{-f}+\sqrt{g}x)}\right)dx}{g} - \frac{(befn}{}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} - \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}dx}{2g^{3/2}} + \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}+\sqrt{g}x}dx}{2g^{3/2}} - \frac{(bef}{}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} + \frac{(a+b\log}{}$$

$$= \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(\sqrt{-f}-\sqrt{g}x)}{e\sqrt{-f}+d\sqrt{g}}\right)}{2g^2} + \frac{(a+b\log}{}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{(a+b\log(c(d+ex)^n}{2g}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{be(ef+d\sqrt{-f}\sqrt{g})n}{}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{be(ef+d\sqrt{-f}\sqrt{g})n}{}$$

$$= -\frac{e^2f(a+b\log(c(d+ex)^n))^2}{2g^2(e^2f+d^2g)} + \frac{f(a+b\log(c(d+ex)^n))^2}{2g^2(f+gx^2)} + \frac{be(ef+d\sqrt{-f}\sqrt{g})n}{}$$

Mathematica [C] time = 2.29988, size = 1103, normalized size = 1.49

$$\frac{b^2\left(2\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log^2(d+ex) + 2\log\left(1-\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)\log^2(d+ex) + 4\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log(d+ex) + 4\text{Pol}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + 2*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n
```

```
*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Sqrt[f]*((-I)*Sqrt[g]*(d + e*x)*Log
[d + e*x] + e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt
[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(I*Sqrt[g]*(d + e*x)
*Log[d + e*x] + e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*
Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 2*(Log[d + e*x]*Log[(e*(S
qrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g
]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*(Log[d + e*x]*Log[(e*(Sqrt[f]
- I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x
))/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*(2*Log[d + e*x]^2*Log[1 - (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]^2*Log[1 - (Sqrt
[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*(I*Sqrt[
g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Log[(e*(Sqrt[f] - I
*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Poly
Log[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d
*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d
+ e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 4*Log[d + e*x]*PolyLog[2, (Sqrt[g]*
(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*((-I)*Sqrt[g
]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*
Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyL
og[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sq
rt[g])*(Sqrt[f] + I*Sqrt[g]*x)) - 4*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*
Sqrt[f] + d*Sqrt[g])] - 4*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*S
qrt[g])]))/(4*g^2)
```

Maple [F] time = 1.322, size = 0, normalized size = 0.

$$\int \frac{x^3\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^3*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,a^2\left(\frac{f}{g^3x^2+fg^2}+\frac{\log\left(gx^2+f\right)}{g^2}\right)+\int\frac{b^2x^3\log\left(\left(ex+d\right)^n\right)^2+2\left(b^2\log\left(c\right)+ab\right)x^3\log\left(\left(ex+d\right)^n\right)+\left(b^2\log\left(c\right)^2+2\,ab\,\mathrm{l}\right.}{g^2x^4+2\,fgx^2+f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(f/(g^3*x^2 + f*g^2) + log(g*x^2 + f)/g^2) + integrate((b^2*x^3*log
((e*x + d)^n)^2 + 2*(b^2*log(c) + a*b)*x^3*log((e*x + d)^n) + (b^2*log(c)^2
 + 2*a*b*log(c))*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^2x^3\log\left(\left(ex+d\right)^nc\right)^2+2\,abx^3\log\left(\left(ex+d\right)^nc\right)+a^2x^3}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*log((e*x + d)^n*c)^2 + 2*a*b*x^3*log((e*x + d)^n*c) + a^2
*x^3)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2 x^3}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^3/(g*x^2 + f)^2, x)
```

3.322 $\int \frac{x(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=430

$$-\frac{b^2en^2\left(d\sqrt{g}+e\sqrt{-f}\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}g\left(d^2g+e^2f\right)}-\frac{b^2en^2\left(d\sqrt{-f}\sqrt{g}+ef\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2fg\left(d^2g+e^2f\right)}-\frac{ben\left(d\sqrt{-f}\sqrt{g}+ef\right)}{}$$

```
[Out] (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d
+ e*x)^n])^2/(2*g*(f + g*x^2)) - (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*L
og[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f*g*(e^2*f + d^2*g)) - (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*
f*g*(e^2*f + d^2*g)) - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g*(e^2*f + d^2*g))
 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] + d*Sqrt[g])])/(2*f*g*(e^2*f + d^2*g))
```

Rubi [A] time = 0.546976, antiderivative size = 430, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {2413, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{b^2en^2\left(d\sqrt{g}+e\sqrt{-f}\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)}{2\sqrt{-f}g\left(d^2g+e^2f\right)}-\frac{b^2en^2\left(d\sqrt{-f}\sqrt{g}+ef\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+e\sqrt{-f}}\right)}{2fg\left(d^2g+e^2f\right)}-\frac{ben\left(d\sqrt{-f}\sqrt{g}+ef\right)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*g*(e^2*f + d^2*g)) - (a + b*Log[c*(d
+ e*x)^n])^2/(2*g*(f + g*x^2)) - (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*L
og[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])]
)/(2*f*g*(e^2*f + d^2*g)) - (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*
f*g*(e^2*f + d^2*g)) - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*n^2*PolyLog[2, -((Sq
rt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g*(e^2*f + d^2*g))
 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*
Sqrt[-f] + d*Sqrt[g])])/(2*f*g*(e^2*f + d^2*g))
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
```

```
RFx, x] && IntegerQ[p]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{\left(f+gx^2\right)^2}\,dx = -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} + \frac{(ben)\int \frac{a+b\log(c(d+ex)^n)}{(d+ex)\left(f+gx^2\right)}\,dx}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} + \frac{(ben)\int \left(\frac{e^2(a+b\log(c(d+ex)^n))}{\left(e^2f+d^2g\right)(d+ex)} - \frac{g(-d+ex)(a+b\log(c(d+ex)^n))}{\left(e^2f+d^2g\right)\left(f+gx^2\right)}\right)dx}{g}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{(ben)\int \frac{(-d+ex)(a+b\log(c(d+ex)^n))}{f+gx^2}\,dx}{e^2f+d^2g} + \frac{\left(be^3n\right)\int \frac{a+b\log(c(d+ex)^n}{d+ex}}{g\left(e^2f+d^2g\right)}$$

$$= -\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{(ben)\int \left(\frac{\left(-d\sqrt{-f}-\frac{ef}{\sqrt{g}}\right)(a+b\log(c(d+ex)^n))}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\left(-d\sqrt{-f}+\frac{ef}{\sqrt{g}}\right)(a+b\log(c(d}{2f\left(\sqrt{-f}+\sqrt{g}x\right)}\right.}{e^2f+d^2g}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{\left(be\left(\frac{d}{\sqrt{-f}}+\frac{e}{\sqrt{g}}\right)n\right)\int \frac{a+b\log(c(d}{\sqrt{-f}+\sqrt{}}}{2\left(e^2f+d^2g\right)}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\frac{e}{\sqrt{g}}\right)n\left(a+b\log(c\right.}{2\sqrt{g}\left(e^2f\right.}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\frac{e}{\sqrt{g}}\right)n\left(a+b\log(c\right.}{2\sqrt{g}\left(e^2f\right.}$$

$$= \frac{e^2\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(e^2f+d^2g\right)} - \frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2g\left(f+gx^2\right)} - \frac{be\left(\frac{df}{(-f)^{3/2}}+\frac{e}{\sqrt{g}}\right)n\left(a+b\log(c\right.}{2\sqrt{g}\left(e^2f\right.}$$

Mathematica [C] time = 0.564844, size = 590, normalized size = 1.37

$$\frac{ib^2n^2\left(\frac{2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{e\sqrt{f}+id\sqrt{g}}\right)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log(d+ex)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{e\sqrt{f}+id\sqrt{g}}\right)-\sqrt{g}(d+ex)\log^2(d+ex)}{\left(\sqrt{f}-i\sqrt{g}x\right)\left(e\sqrt{f}+id\sqrt{g}\right)}+\frac{2ie\left(\sqrt{f}+i\sqrt{g}x\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{d\sqrt{g}+ie\sqrt{f}}\right)+\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+2i\right.}{\left(\sqrt{f}+i\sqrt{g}x\right)\left(e\sqrt{f}-id\sqrt{g}\right)}\right.}{\sqrt{f}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((-2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + (2*b*n*
(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n])*(2*Sqrt[f]*g*(d^2 - e^2*x^2)
*Log[d + e*x] + e*(f + g*x^2)*((e*Sqrt[f] + I*d*Sqrt[g])*Log[I*Sqrt[f] - Sq
rt[g]*x] + (e*Sqrt[f] - I*d*Sqrt[g])*Log[I*Sqrt[f] + Sqrt[g]*x])))/(Sqrt[f]
*(e^2*f + d^2*g)*(f + g*x^2)) + (I*b^2*n^2*((-(Sqrt[g]*(d + e*x)*Log[d + e*
x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g
]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (
I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])/((e*Sqrt[f] + I*d*Sqrt[g])
*(Sqrt[f] - I*Sqrt[g]*x)) + (Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x] +
 (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f]
 - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d
+ e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I
*Sqrt[g]*x))))/Sqrt[f])/(4*g)
```

Maple [C] time = 0.64, size = 2134, normalized size = 5.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] 1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+1/2*I/
g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/
8*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*P
i*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)^2/g/(g*x^2+f)-1/2*I/g/(g*x^2+f)*ln((
e*x+d)^n)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b^2*n*e/(d^2*g+e^2
*f)*d/(f*g)^(1/2)*arctan(1/2*(2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln((e*x+d)^
n)+b*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*a+n*e/(d^2*g+e
^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b^2*ln(c)+b^2/g*n*e^2/(d^2*g+e^
2*f)*ln(e*x+d)*ln((e*x+d)^n)-1/2*I/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*Pi*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2-b^2*n^2*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(1/2*(
2*g*(e*x+d)-2*d*g)/e/(f*g)^(1/2))*ln(e*x+d)+1/2*b^2*n^2*e/(d^2*g+e^2*f)*ln(
e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))
*d-1/2*b^2*n^2*e/(d^2*g+e^2*f)*ln(e*x+d)/(-f*g)^(1/2)*ln((e*(-f*g)^(1/2)+g*
(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d-1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f
)*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*b^2/g/(g*x^2+f)*ln((e*
x+d)^n)^2-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*ln(e*x+d)*ln((e*(-f*g)^(1/2)-g*(e
*x+d)+d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*ln(e*x+d)*
ln((e*(-f*g)^(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b^2*n^2*e/(d^2*
g+e^2*f)/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+d*g)/(e*(-f*g)^(1/2)+
d*g))*d-1/2*b^2*n^2*e/(d^2*g+e^2*f)/(-f*g)^(1/2)*dilog((e*(-f*g)^(1/2)+g*(e
*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))*d+1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^
2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I/g*n*e^2/(d^2*g+e^2*f)*ln
(g*x^2+f)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-b/g/(g*x^2+f)*ln((e*x+d)^n
)*a-1/g/(g*x^2+f)*ln((e*x+d)^n)*b^2*ln(c)-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*l
n(e*x+d)^2-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*dilog((e*(-f*g)^(1/2)-g*(e*x+d)+
d*g)/(e*(-f*g)^(1/2)+d*g))-1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*dilog((e*(-f*g)^
(1/2)+g*(e*x+d)-d*g)/(e*(-f*g)^(1/2)-d*g))+1/2*b^2/g*n^2*e^2/(d^2*g+e^2*f)*
ln(g*(e*x+d)^2-2*d*g*(e*x+d)+d^2*g+f*e^2)*ln(e*x+d)+b/g*n*e^2/(d^2*g+e^2*f)
*ln(e*x+d)*a-1/2*b/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*a+1/g*n*e^2/(d^2*g+e^2
*f)*ln(e*x+d)*b^2*ln(c)-1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f
*g)^(1/2))*b^2*Pi*csgn(I*c*(e*x+d)^n)^3+1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+
d)*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^(
1/2)*arctan(x*g/(f*g)^(1/2))*b^2*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*n
*e/(d^2*g+e^2*f)*d/(f*g)^(1/2)*arctan(x*g/(f*g)^(1/2))*b^2*Pi*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I/g*n*e^2/(d^2*g+e^2*f)*ln(e*x+d)*b^
2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I/g*n*e^2/(d^2*g+e
^2*f)*ln(g*x^2+f)*b^2*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/
2/g*n*e^2/(d^2*g+e^2*f)*ln(g*x^2+f)*b^2*ln(c)+1/2*I/g/(g*x^2+f)*ln((e*x+d)^
n)*b^2*Pi*csgn(I*c*(e*x+d)^n)^3-1/2*b^2/g*n*e^2/(d^2*g+e^2*f)*ln(g*(e*x+d)^
2-2*d*g*(e*x+d)+d^2*g+f*e^2)*ln((e*x+d)^n)+1/2*I*n*e/(d^2*g+e^2*f)*d/(f*g)^
(1/2)*arctan(x*g/(f*g)^(1/2))*b^2*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^
2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2x\log\left((ex+d)^nc\right)^2+2\,abx\log\left((ex+d)^nc\right)+a^2x}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x*log((e*x + d)^n*c)^2 + 2*a*b*x*log((e*x + d)^n*c) + a^2*x)/
(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x/(g*x^2 + f)^2, x)
```

3.323 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=814

$$-\frac{b^2e\left(\sqrt{g}d+e\sqrt{-f}\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\left(gd^2+e^2f\right)}+\frac{b^2e\left(\sqrt{-f}\sqrt{g}d+ef\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f^2\left(gd^2+e^2f\right)}+\frac{b^2\text{PolyLog}\left(3,-\right.}{f^2}$$

```
[Out] -(e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d
 + e*x)^n])^2/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n
])^2)/f^2 + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e^2*f + d^2
*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt
[-f] + d*Sqrt[g])])/(2*f^2) + (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[
c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^2*(e^2*f + d^2*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) - (b^2*e*(e*Sqrt[-f] + d*Sqrt
[g])*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-
f)^(3/2)*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*e*(e*f + d*Sqrt[-f
]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2
*f^2*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 + (2*b*n*(a + b*Log[c*(d + e*x)^
n])*PolyLog[2, 1 + (e*x)/d])/f^2 + (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x)
)/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d])/f^2
```

Rubi [A] time = 1.30039, antiderivative size = 814, normalized size of antiderivative = 1., number of steps used = 29, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {2416, 2396, 2433, 2374, 6589, 2413, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{b^2e\left(\sqrt{g}d+e\sqrt{-f}\right)\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\left(gd^2+e^2f\right)}+\frac{b^2e\left(\sqrt{-f}\sqrt{g}d+ef\right)\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f^2\left(gd^2+e^2f\right)}+\frac{b^2\text{PolyLog}\left(3,-\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)^2),x]
```

```
[Out] -(e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*f*(e^2*f + d^2*g)) + (a + b*Log[c*(d
 + e*x)^n])^2/(2*f*(f + g*x^2)) + (Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n
])^2)/f^2 + (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e^2*f + d^2
*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt
[-f] + d*Sqrt[g])])/(2*f^2) + (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*n*(a + b*Log[
c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^2*(e^2*f + d^2*g)) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^2) - (b^2*e*(e*Sqrt[-f] + d*Sqrt
[g])*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-
f)^(3/2)*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((S
qrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*e*(e*f + d*Sqrt[-f
]*Sqrt[g])*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2
*f^2*(e^2*f + d^2*g)) - (b*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 + (2*b*n*(a + b*Log[c*(d + e*x)^
```

```
n])*PolyLog[2, 1 + (e*x)/d])/f^2 + (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x)
)/(e*Sqrt[-f] - d*Sqrt[g]))])/f^2 + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))
/(e*Sqrt[-f] + d*Sqrt[g])])/f^2 - (2*b^2*n^2*PolyLog[3, 1 + (e*x)/d])/f^2
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x\left(f+gx^2\right)^2}dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{f^2x} - \frac{gx(a+b\log(c(d+ex)^n))^2}{f\left(f+gx^2\right)^2} - \frac{gx(a+b\log(c(d+ex)^n))^2}{f^2\left(f+gx^2\right)}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x}dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{f^2} - \frac{g\int \frac{x(a+b\log(c(d+ex)^n))^2}{\left(f+gx^2\right)^2}dx}{f}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{g\int\left(-\frac{(a+b\log(c(d+ex)^n))^2}{2\sqrt{g}\left(\sqrt{-f}-\sqrt{g}x\right)}\right.}{f^2}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} + \frac{\sqrt{g}\int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x}d}{2f^2}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{(a+b\log(c(d+ex)^n))^2}{2f^2}$$

$$= \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))^2}{f^2} - \frac{(a+b\log(c(d+ex)^n))^2}{2f^2}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f\left(e^2f+d^2g\right)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)}{f^2}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f\left(e^2f+d^2g\right)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)}{f^2}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f\left(e^2f+d^2g\right)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)}{f^2}$$

$$= -\frac{e^2(a+b\log(c(d+ex)^n))^2}{2f\left(e^2f+d^2g\right)} + \frac{(a+b\log(c(d+ex)^n))^2}{2f\left(f+gx^2\right)} + \frac{\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)}{f^2}$$

Mathematica [C] time = 2.03173, size = 1209, normalized size = 1.49

$$b^2\left(4\log\left(-\frac{ex}{d}\right)\log^2(d+ex) - 2\log\left(1-\frac{\sqrt{g}(d+ex)}{d\sqrt{g}-ie\sqrt{f}}\right)\log^2(d+ex) - 2\log\left(1-\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+ie\sqrt{f}}\right)\log^2(d+ex) - 4\text{PolyLog}\left(2,\frac{\sqrt{g}(d+}{d\sqrt{g}-ie}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x*(f + g*x^2)^2),x]
```

```
[Out] ((2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) + 4*Log[
x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*(a - b*n*Log[d + e*x
] + b*Log[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x] +
b*Log[c*(d + e*x)^n])*((Sqrt[f]*((-I)*Sqrt[g]*(d + e*x)*Log[d + e*x] + e*(S
qrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g
])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*(I*Sqrt[g]*(d + e*x)*Log[d + e*x] +
e*(Sqrt[f] - I*Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sq
rt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 2*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[
g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*
Sqrt[f] - I*d*Sqrt[g])]) - 2*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/
(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] +
I*d*Sqrt[g])]) + 4*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)/d])
) + b^2*n^2*(4*Log[-((e*x)/d)]*Log[d + e*x]^2 - 2*Log[d + e*x]^2*Log[1 - (S
qrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*(I*
Sqrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] - I*Sqrt[g]*x)*Log[(e*(Sqrt[f
] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])]) + 2*e*(Sqrt[f] - I*Sqrt[g]*x)
*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f]
+ I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - 4*Log[d + e*x]*PolyLog[2, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 4*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + (Sqrt[f]*(Log[d + e*x]*((-I)*S
qrt[g]*(d + e*x)*Log[d + e*x] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f]
 + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*
PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I
*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + 8*Log[d + e*x]*PolyLog[2, 1 + (e*x)/
d] + 4*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 4*Pol
yLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 8*PolyLog[3, 1 + (
e*x)/d]))/(4*f^2)
```

Maple [F] time = 1.363, size = 0, normalized size = 0.

$$\int \frac{\left(a + b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x\left(gx^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}a^{2}\left(\frac{1}{fgx^{2}+f^{2}} - \frac{\log\left(gx^{2}+f\right)}{f^{2}} + \frac{2\,\log\left(x\right)}{f^{2}}\right) + \int \frac{b^{2}\log\left(\left(ex+d\right)^{n}\right)^{2} + b^{2}\log\left(c\right)^{2} + 2\,ab\log\left(c\right) + 2\left(b^{2}\log\left(c\right) + ab\right)}{g^{2}x^{5} + 2\,fgx^{3} + f^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(1/(f*g*x^2 + f^2) - log(g*x^2 + f)/f^2 + 2*log(x)/f^2) + integrate
((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*log(c) + 2*(b^2*log(c) + a*
b)*log((e*x + d)^n))/(g^2*x^5 + 2*f*g*x^3 + f^2*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2+2\,ab\log\left((ex+d)^n c\right)+a^2}{g^2x^5+2\,fgx^3+f^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^5 + 2*f*g*x^3 + f^2*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2}{\left(gx^2+f\right)^2x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)^2*x), x)
```

3.324 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3(f+gx^2)^2}\,dx$

Optimal. Leaf size=970

result too large to display

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f^2) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]
))/(d^2*f^2*x) + (e^2*g*(a + b*Log[c*(d + e*x)^n])^2)/(2*f^2*(e^2*f + d^2*g
)) - (a + b*Log[c*(d + e*x)^n])^2/(2*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n
])^2)/(2*f^2*(f + g*x^2)) - (2*g*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])
^2)/f^3 - (b*e*(e*f + d*Sqrt[-f]*Sqrt[g])*g*n*(a + b*Log[c*(d + e*x)^n])*Lo
g[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2
*g)) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sq
rt[-f] + d*Sqrt[g])])/f^3 - (b*e*(e*f - d*Sqrt[-f]*Sqrt[g])*g*n*(a + b*Log[
c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(
2*f^3*(e^2*f + d^2*g)) + (g*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] +
 Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/f^3 - (b*e^2*n*(a + b*Log[c*(d + e*
x)^n])*Log[1 - d/(d + e*x)])/(d^2*f^2) + (b^2*e^2*n^2*PolyLog[2, d/(d + e*x
)])/(d^2*f^2) - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*g*n^2*PolyLog[2, -((Sqrt[g]
*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)*(e^2*f + d^2*g)) + (2
*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] - d*Sqrt[g]))])/f^3 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*g*n^2*PolyLog[2
, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) +
(2*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] + d*Sqrt[g])])/f^3 - (4*b*g*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 +
 (e*x)/d])/f^3 - (2*b^2*g*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
- d*Sqrt[g]))])/f^3 - (2*b^2*g*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-
f] + d*Sqrt[g])])/f^3 + (4*b^2*g*n^2*PolyLog[3, 1 + (e*x)/d])/f^3
```

Rubi [A] time = 1.65316, antiderivative size = 994, normalized size of antiderivative = 1.02, number of steps used = 38, number of rules used = 19, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.655, Rules used = {2416, 2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2396, 2433, 2374, 6589, 2413, 2418, 2390, 2394, 2393}

$$\frac{g\left(a+b\log\left(c(d+ex)^n\right)\right)^2e^2}{2f^2\left(gd^2+e^2f\right)}+\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)^2e^2}{2d^2f^2}+\frac{b^2n^2\log(x)e^2}{d^2f^2}-\frac{bn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)e^2}{d^2f^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)^2),x]
```

```
[Out] (b^2*e^2*n^2*Log[x])/(d^2*f^2) - (b*e*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]
))/(d^2*f^2*x) - (b*e^2*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d^2*
f^2) + (e^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*d^2*f^2) + (e^2*g*(a + b*Log[c
*(d + e*x)^n])^2)/(2*f^2*(e^2*f + d^2*g)) - (a + b*Log[c*(d + e*x)^n])^2/(2
*f^2*x^2) - (g*(a + b*Log[c*(d + e*x)^n])^2)/(2*f^2*(f + g*x^2)) - (2*g*Log
[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/f^3 - (b*e*(e*f + d*Sqrt[-f]*Sqr
t[g])*g*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt
[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) + (g*(a + b*Log[c*(d + e*x)^n])
^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3 - (b*e*(e*
f - d*Sqrt[-f]*Sqrt[g])*g*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + S
qrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) + (g*(a + b*L
og[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g]
)])/f^3 - (b^2*e*(e*Sqrt[-f] + d*Sqrt[g])*g*n^2*PolyLog[2, -((Sqrt[g]*(d +
```

```
e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/2)*(e^2*f + d^2*g)) + (2*b*g*n
*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] -
d*Sqrt[g]))])/f^3 - (b^2*e*(e*f + d*Sqrt[-f]*Sqrt[g])*g*n^2*PolyLog[2, (Sqr
t[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^3*(e^2*f + d^2*g)) + (2*b*g
*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] +
d*Sqrt[g])])/f^3 - (b^2*e^2*n^2*PolyLog[2, 1 + (e*x)/d])/(d^2*f^2) - (4*b*g
*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/f^3 - (2*b^2*g*n^2*P
olyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/f^3 - (2*b^2*g*
n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/f^3 + (4*b^2*
g*n^2*PolyLog[3, 1 + (e*x)/d])/f^3
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
```

```
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2413

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(x_)^(m_.)*(
(f_.) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Simp[((f + g*x^r)^(q + 1)*(a
+ b*Log[c*(d + e*x)^n])^p)/(g*r*(q + 1)), x] - Dist[(b*e*n*p)/(g*r*(q + 1))
, Int[((f + g*x^r)^(q + 1)*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x
], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, q, r}, x] && EqQ[m, r - 1] && Ne
Q[q, -1] && IGtQ[p, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3\left(f+gx^2\right)^2}\,dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{f^2x^3} - \frac{2g(a+b\log(c(d+ex)^n))^2}{f^3x} + \frac{g^2x(a+b\log(c(d+ex)}{f^2\left(f+gx^2\right)^2}\right.$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^3}\,dx}{f^2} - \frac{(2g)\int \frac{(a+b\log(c(d+ex)^n))^2}{x}\,dx}{f^3} + \frac{\left(2g^2\right)\int \frac{x(a+b\log(c(d+ex)^n))^2}{f+gx^2}\,dx}{f^3} +$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d}{f^3}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d}{f^3}$$

$$= -\frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f^2\left(f+gx^2\right)} - \frac{2g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d}{f^3}$$

$$= -\frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{(a+b\log(c(d+ex)^n))^2}{2f^2x^2} - \frac{g(a+b\log(c(d+}{2f^2\left(f+gx^2\right.}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{d^2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{d^2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{d^2f^2}$$

$$= \frac{b^2e^2n^2\log(x)}{d^2f^2} - \frac{ben(d+ex)(a+b\log(c(d+ex)^n))}{d^2f^2x} - \frac{be^2n\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{d^2f^2}$$

Mathematica [C] time = 2.93581, size = 1391, normalized size = 1.43

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^3*(f + g*x^2)^2),x]
```

```
[Out] ((-2*f*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/x^2 - (2*f*g*(a - b
*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 8*g*Log[x]*(a - b*
n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 4*g*(a - b*n*Log[d + e*x] + b*Lo
```

```
g[c*(d + e*x)^n])^2*Log[f + g*x^2] + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*
(d + e*x)^n])*((-2*f*(d*e*x + e^2*x^2*Log[x] + (d^2 - e^2*x^2)*Log[d + e*x]
))/(d^2*x^2) + (I*Sqrt[f]*g*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[f]
+ I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqr
t[f] + I*Sqrt[g]*x)) + (I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*
(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt
[g])*(Sqrt[f] - I*Sqrt[g]*x)) + 4*g*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[
g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*
Sqrt[f] - I*d*Sqrt[g])]) + 4*g*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x)
)/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f]
+ I*d*Sqrt[g])]) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x] + PolyLog[2, 1 + (e*x)
/d])) + b^2*n^2*((I*Sqrt[f]*g*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I
*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[
f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d +
 e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I
*Sqrt[g]*x)) - (Sqrt[f]*g*(Log[d + e*x]*((-I)*Sqrt[g]*(d + e*x)*Log[d + e*x
] + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f]
- I*d*Sqrt[g])]) + 2*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqr
t[g]*x)) - (2*f*(-2*e^2*Log[x] + (Log[d + e*x]*(2*e^2*x^2*Log[-((e*x)/d)] +
 (d + e*x)*(2*e*x + (d - e*x)*Log[d + e*x])))/x^2 + 2*e^2*PolyLog[2, 1 + (e
*x)/d]))/d^2 + 4*g*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt
[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*S
qrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d
*Sqrt[g])]) + 4*g*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
+ d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f]
+ d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]
) - 8*g*(Log[-((e*x)/d)]*Log[d + e*x]^2 + 2*Log[d + e*x]*PolyLog[2, 1 + (e*
x)/d] - 2*PolyLog[3, 1 + (e*x)/d])))/(4*f^3)
```

Maple [F] time = 1.444, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\,(ex+d)^{n}\right)\right)^{2}}{x^{3}\left(gx^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}\,a^{2}\left(\frac{2\,gx^{2}+f}{f^{2}gx^{4}+f^{3}x^{2}}-\frac{2\,g\log\left(gx^{2}+f\right)}{f^{3}}+\frac{4\,g\log\left(x\right)}{f^{3}}\right)+\int\frac{b^{2}\log\left(\left(ex+d\right)^{n}\right)^{2}+b^{2}\log\left(c\right)^{2}+2\,ab\log\left(c\right)+2\left(b^{2}\log\left(c\right)\right.}{g^{2}x^{7}+2\,fgx^{5}+f^{2}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*((2*g*x^2 + f)/(f^2*g*x^4 + f^3*x^2) - 2*g*log(g*x^2 + f)/f^3 + 4*
g*log(x)/f^3) + integrate((b^2*log((e*x + d)^n)^2 + b^2*log(c)^2 + 2*a*b*lo
g(c) + 2*(b^2*log(c) + a*b)*log((e*x + d)^n))/(g^2*x^7 + 2*f*g*x^5 + f^2*x^
```

```
3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2 + 2\,ab\log\left((ex+d)^n c\right) + a^2}{g^2x^7 + 2\,fgx^5 + f^2x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^7 + 2*f*g*x^5 + f^2*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**3/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)^2}{\left(gx^2 + f\right)^2 x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^3/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)^2*x^3), x)
```

3.325 $\int \frac{x^4(a+b\log(c(d+ex)^n))^2}{\left(f+gx^2\right)^2}\,dx$

Optimal. Leaf size=897

result too large to display

```
[Out] (-2*a*b*n*x)/g^2 + (2*b^2*n^2*x)/g^2 - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e*g^2) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (f*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^2*(Sqrt[-f] -
 Sqrt[g]*x)) - (f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] -
d*Sqrt[g])*g^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*(a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
+ d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sq
rt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f]*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*g^(
5/2)) + (b^2*e*f*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[
g]))])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*b*Sqrt[-f]*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*g^(5/2)) - (b^2*e*f*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*S
qrt[g])])/(2*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) + (3*b*Sqrt[-f]*n*(a + b*Log
[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/
(2*g^(5/2)) + (3*b^2*Sqrt[-f]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] - d*Sqrt[g]))])/(2*g^(5/2)) - (3*b^2*Sqrt[-f]*n^2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(5/2))
```

Rubi [A] time = 1.7839, antiderivative size = 897, normalized size of antiderivative = 1., number of steps used = 36, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.448, Rules used = {2416, 2389, 2296, 2295, 2409, 2397, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{2n^2xb^2}{g^2} - \frac{2n(d+ex)\log\left(c(d+ex)^n\right)b^2}{eg^2} + \frac{efn^2\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)b^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{5/2}} - \frac{efn^2\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)b^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{5/2}} + \frac{3\sqrt{-f}n^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```


```
[Out] (-2*a*b*n*x)/g^2 + (2*b^2*n^2*x)/g^2 - (2*b^2*n*(d + e*x)*Log[c*(d + e*x)^n
])/(e*g^2) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(e*g^2) - (f*(d + e*x
)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g^2*(Sqrt[-f] -
 Sqrt[g]*x)) - (f*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] -
d*Sqrt[g])*g^2*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*f*n*(a + b*Log[c*(d + e*x)^n]
)*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
+ d*Sqrt[g])*g^(5/2)) + (3*Sqrt[-f]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sq
rt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*g^(5/2)) + (b*e*f*n*(a +
 b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[
g])])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*Sqrt[-f]*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*g^(
5/2)) + (b^2*e*f*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[
g]))])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(5/2)) - (3*b*Sqrt[-f]*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*g^(5/2)) - (b^2*e*f*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*S
```

```
qrt[g])])/(2*(e*Sqrt[-f] + d*Sqrt[g])*g^(5/2)) + (3*b*Sqrt[-f]*n*(a + b*Log
[c*(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/
(2*g^(5/2)) + (3*b^2*Sqrt[-f]*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[
-f] - d*Sqrt[g]))])/(2*g^(5/2)) - (3*b^2*Sqrt[-f]*n^2*PolyLog[3, (Sqrt[g]*(
d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*g^(5/2))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4 (a + b\log (c(d + ex)^n))^2}{\left(f + gx^2\right)^2} dx = \int \left(\frac{(a + b\log (c(d + ex)^n))^2}{g^2} + \frac{f^2 (a + b\log (c(d + ex)^n))^2}{g^2 \left(f + gx^2\right)^2} - \frac{2f (a + b\log (c(d + e}{g^2 \left(f + gx^2\right)}\right.$$

$$= \frac{\int (a + b\log (c(d + ex)^n))^2 \, dx}{g^2} - \frac{(2f) \int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2} dx}{g^2} + \frac{f^2 \int \frac{(a+b\log(c(d+ex)^n))}{\left(f+gx^2\right)^2}}{g^2}$$

$$= \frac{\text{Subst}\left(\int (a + b\log (cx^n))^2 \, dx, x, d + ex\right)}{eg^2} - \frac{(2f) \int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f\left(\sqrt{-f}-\sqrt{g}x\right)} + \frac{\sqrt{-f}(a+b}{2f(}\right.}{g^2}$$

$$= \frac{(d + ex) (a + b\log (c(d + ex)^n))^2}{eg^2} - \frac{\sqrt{-f} \int \frac{(a+b\log(c(d+ex)^n))^2}{\sqrt{-f}-\sqrt{g}x} dx}{g^2} - \frac{\sqrt{-f} \int \frac{(a+b\log(c(d}{\sqrt{-f}+}}{g^2}$$

$$= -\frac{2abnx}{g^2} + \frac{(d + ex) (a + b\log (c(d + ex)^n))^2}{eg^2} - \frac{f(d + ex) (a + b\log (c(d + ex)^n))^2}{4 \left(e\sqrt{-f} + d\sqrt{g}\right) g^2 \left(\sqrt{-f} - \sqrt{g}x\right)} -$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d + ex) \log (c(d + ex)^n)}{eg^2} + \frac{(d + ex) (a + b\log (c(d + ex)^n}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d + ex) \log (c(d + ex)^n)}{eg^2} + \frac{(d + ex) (a + b\log (c(d + ex)^n}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d + ex) \log (c(d + ex)^n)}{eg^2} + \frac{(d + ex) (a + b\log (c(d + ex)^n}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d + ex) \log (c(d + ex)^n)}{eg^2} + \frac{(d + ex) (a + b\log (c(d + ex)^n}{eg^2}$$

$$= -\frac{2abnx}{g^2} + \frac{2b^2n^2x}{g^2} - \frac{2b^2n(d + ex) \log (c(d + ex)^n)}{eg^2} + \frac{(d + ex) (a + b\log (c(d + ex)^n}{eg^2}$$

Mathematica [C] time = 3.0199, size = 1237, normalized size = 1.38

$$b^2 \left(\frac{4\sqrt{g}\left((d+ex)\log^2(d+ex)-2(d+ex)\log(d+ex)+2ex\right)}{e} - \frac{f\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{PolyLog}\left(2,\frac{i\sqrt{}}{i\sqrt{}}\right.\right.}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] (4*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + (2*f*Sqrt[g]
*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 6*Sqrt[f]
*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((4*Sqrt[g]*(d + e*
x)*(-1 + Log[d + e*x]))/e + (f*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[
f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(
Sqrt[f] + I*Sqrt[g]*x)) + (f*(Sqrt[g]*(d + e*x)*Log[d + e*x] + e*((-I)*Sqrt
[f] - Sqrt[g]*x)*Log[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(S
qrt[f] - I*Sqrt[g]*x)) + (3*I)*Sqrt[f]*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sq
rt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/
(e*Sqrt[f] - I*d*Sqrt[g])]) - (3*I)*Sqrt[f]*(Log[d + e*x]*Log[(e*(Sqrt[f] -
 I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x)
)/(e*Sqrt[f] + I*d*Sqrt[g])])) + b^2*n^2*((4*Sqrt[g]*(2*e*x - 2*(d + e*x)*L
og[d + e*x] + (d + e*x)*Log[d + e*x]^2))/e - (f*(-(Sqrt[g]*(d + e*x)*Log[d
+ e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sq
rt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[
2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqr
t[g])*(Sqrt[f] - I*Sqrt[g]*x)) + (f*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d
+ e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e
*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sq
rt[f] + I*Sqrt[g]*x)) - (3*I)*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d +
 e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(
d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/
((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (3*I)*Sqrt[f]*(Log[d + e*x]^2*Log[1 - (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[2, (Sqr
t[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x
))/(I*e*Sqrt[f] + d*Sqrt[g])]))))/(4*g^(5/2))
```

Maple [F] time = 3.694, size = 0, normalized size = 0.

$$\int \frac{x^4 \left(a + b\ln\left(c\left(ex+d\right)^n\right)\right)^2}{\left(gx^2+f\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^4*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2x^4\log\left((ex+d)^nc\right)^2+2\,abx^4\log\left((ex+d)^nc\right)+a^2x^4}{g^2x^4+2\,fgx^2+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*log((e*x + d)^n*c)^2 + 2*a*b*x^4*log((e*x + d)^n*c) + a^2
*x^4)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2x^4}{\left(gx^2+f\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^4/(g*x^2 + f)^2, x)
```

3.326 $\int \frac{x^2(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=815

$$-\frac{b^2 e \text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}+\frac{b^2 e \text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{3/2}}+\frac{b^2 \text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\sqrt{-f}g^{3/2}}-\frac{b^2 \text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\sqrt{-f}g^{3/2}}$$

```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g*(Sqr
t[-f] - Sqrt[g]*x)) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-
f] - d*Sqrt[g])*g*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*n*(a + b*Log[c*(d + e*x)^n
])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
 + d*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - S
qrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])
])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x)^n])^2*Log
[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
 - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*n*(a + b*Log[c*(d + e*x)^n])*Poly
Log[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g^(3/2
)) + (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyL
og[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*g^(3/2)) +
 (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*S
qrt[-f]*g^(3/2)) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*
Sqrt[g])])/(2*Sqrt[-f]*g^(3/2))
```

Rubi [A] time = 1.54447, antiderivative size = 815, normalized size of antiderivative = 1., number of steps used = 32, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {2416, 2409, 2397, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$-\frac{b^2 e \text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}+\frac{b^2 e \text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\left(\sqrt{g}d+e\sqrt{-f}\right)g^{3/2}}+\frac{b^2 \text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\sqrt{-f}g^{3/2}}-\frac{b^2 \text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2\sqrt{-f}g^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```


```
[Out] ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-f] + d*Sqrt[g])*g*(Sqr
t[-f] - Sqrt[g]*x)) + ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*(e*Sqrt[-
f] - d*Sqrt[g])*g*(Sqrt[-f] + Sqrt[g]*x)) + (b*e*n*(a + b*Log[c*(d + e*x)^n
])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(e*Sqrt[-f]
 + d*Sqrt[g])*g^(3/2)) + ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - S
qrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2)) - (b*e*n*(a + b*
Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])
])/(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - ((a + b*Log[c*(d + e*x)^n])^2*Log
[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*Sqrt[-f]*g^(3/2))
 - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*(e*Sqrt[-f] - d*Sqrt[g])*g^(3/2)) - (b*n*(a + b*Log[c*(d + e*x)^n])*Poly
Log[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*Sqrt[-f]*g^(3/2
)) + (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(
2*(e*Sqrt[-f] + d*Sqrt[g])*g^(3/2)) + (b*n*(a + b*Log[c*(d + e*x)^n])*PolyL
og[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*g^(3/2)) +
 (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*S
```

qrt[-f]*g^(3/2)) - (b^2*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*Sqrt[-f]*g^(3/2))

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2 (a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}dx = \int \left(-\frac{f(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)^2} + \frac{(a+b\log(c(d+ex)^n))^2}{g(f+gx^2)}\right)dx$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{g} - \frac{f\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}dx}{g}$$

$$= \frac{\int\left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}+\sqrt{g}x)}\right)dx}{g} - \frac{f\int\left(-\frac{g(a+b\log(c(d+ex)^n))^2}{4f(\sqrt{-f}\sqrt{g}-gx)^2} - \frac{g(a \cdots}{4 \cdots}\right.}{\cdots}$$

$$= \frac{1}{4}\int \frac{(a+b\log(c(d+ex)^n))^2}{(\sqrt{-f}\sqrt{g}-gx)^2}dx + \frac{1}{4}\int \frac{(a+b\log(c(d+ex)^n))^2}{(\sqrt{-f}\sqrt{g}+gx)^2}dx + \frac{1}{2}\int \frac{(a+b \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}+d\sqrt{g})g(\sqrt{-f}-\sqrt{g}x)} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}-d\sqrt{g})g(\sqrt{-f}+\sqrt{g}x)} + \frac{(a+b\log \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}+d\sqrt{g})g(\sqrt{-f}-\sqrt{g}x)} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}-d\sqrt{g})g(\sqrt{-f}+\sqrt{g}x)} + \frac{ben(a+b \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}+d\sqrt{g})g(\sqrt{-f}-\sqrt{g}x)} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}-d\sqrt{g})g(\sqrt{-f}+\sqrt{g}x)} + \frac{ben(a+b \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}+d\sqrt{g})g(\sqrt{-f}-\sqrt{g}x)} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}-d\sqrt{g})g(\sqrt{-f}+\sqrt{g}x)} + \frac{ben(a+b \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}+d\sqrt{g})g(\sqrt{-f}-\sqrt{g}x)} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}-d\sqrt{g})g(\sqrt{-f}+\sqrt{g}x)} + \frac{ben(a+b \cdots}{\cdots}$$

$$= \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}+d\sqrt{g})g(\sqrt{-f}-\sqrt{g}x)} + \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4(e\sqrt{-f}-d\sqrt{g})g(\sqrt{-f}+\sqrt{g}x)} + \frac{ben(a+b \cdots}{\cdots}$$

Mathematica [C] time = 2.42085, size = 1132, normalized size = 1.39

$$b^2\left(\frac{-\sqrt{g}(d+ex)\log^2(d+ex)+2e(\sqrt{g}x+i\sqrt{f})\log\left(\frac{e(\sqrt{f}-i\sqrt{g}x)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e(\sqrt{g}x+i\sqrt{f})\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)}{(i\sqrt{g}d+e\sqrt{f})(\sqrt{f}-i\sqrt{g}x)} - \frac{\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+2ie(i\sqrt{g}x+ \cdots\right.}{(e\sqrt{\cdots}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)^2,x]
```

```
[Out] ((-2*Sqrt[g]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)
 + (2*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)
^n])^2)/Sqrt[f] + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((-(S
qrt[g]*(d + e*x)*Log[d + e*x]) + e*((-I)*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f]
 - Sqrt[g]*x])/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (-(Sqr
t[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] + Sq
rt[g]*x])/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (I*(Log[d +
 e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])] + PolyLog[
2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]))/Sqrt[f] + (I*(Log[
d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + PolyL
og[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/Sqrt[f]) + b^2*n^2
*((-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*Log[d
+ e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] + 2*e*(I*
Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt
[g])])/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) - (Log[d + e*x]*
(Sqrt[g]*(d + e*x)*Log[d + e*x] + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(S
qrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*S
qrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])/((e*Sq
rt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (I*(Log[d + e*x]^2*Log[1 -
(Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*PolyLog[
2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[g
]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]))/Sqrt[f] - (I*(Log[d + e*x]^2*L
og[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2*Log[d + e*x]*Poly
Log[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2*PolyLog[3, (Sqrt[
g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/Sqrt[f]))/(4*g^(3/2))
```

Maple [F] time = 12.387, size = 0, normalized size = 0.

$$\int \frac{x^{2} \left(a+b \ln \left(c \left(e x+d\right)^{n}\right)\right)^{2}}{\left(g \,x^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int(x^2*(a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2} x^{2} \log\left((e x+d)^{n} c\right)^{2}+2\, a b x^{2} \log\left((e x+d)^{n} c\right)+a^{2} x^{2}}{g^{2} x^{4}+2\, f g x^{2}+f^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*log((e*x + d)^n*c)^2 + 2*a*b*x^2*log((e*x + d)^n*c) + a^2
*x^2)/(g^2*x^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log \left((ex+d)^n c\right) + a\right)^2 x^2}{\left(gx^2 + f\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^2/(g*x^2 + f)^2, x)
```

3.327 $\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx$

Optimal. Leaf size=821

$$-\frac{b^2 e \text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{b^2 e \text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f\left(\sqrt{g}d+e\sqrt{-f}\right)\sqrt{g}}-\frac{b^2 \text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}+\frac{b^2 \text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+\dots}\right)}{2(-f)^{3/2}\sqrt{g}}$$

```
[Out] -((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*(Sq
rt[-f] - Sqrt[g]*x)) - ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqr
t[-f] - d*Sqrt[g])*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f*(e*Sqrt[
-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f]
- Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqr
t[g])])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(3/
2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*S
qrt[g]))])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + (b*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*
(-f)^(3/2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 + d*Sqrt[g])])/(2*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - (b*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*
(-f)^(3/2)*Sqrt[g]) - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 - d*Sqrt[g]))])/(2*(-f)^(3/2)*Sqrt[g]) + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d +
 e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)*Sqrt[g])
```

Rubi [A] time = 0.846161, antiderivative size = 821, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2409, 2397, 2394, 2393, 2391, 2396, 2433, 2374, 6589}

$$-\frac{b^2 e \text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2\left(e(-f)^{3/2}+df\sqrt{g}\right)\sqrt{g}}-\frac{b^2 e \text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f\left(\sqrt{g}d+e\sqrt{-f}\right)\sqrt{g}}-\frac{b^2 \text{PolyLog}\left(3,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2(-f)^{3/2}\sqrt{g}}+\frac{b^2 \text{PolyLog}\left(3,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+\dots}\right)}{2(-f)^{3/2}\sqrt{g}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2)^2,x]
```


```
[Out] -((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqrt[-f] + d*Sqrt[g])*(Sq
rt[-f] - Sqrt[g]*x)) - ((d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f*(e*Sqr
t[-f] - d*Sqrt[g])*(Sqrt[-f] + Sqrt[g]*x)) - (b*e*n*(a + b*Log[c*(d + e*x)^
n])*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f*(e*Sqrt[
-f] + d*Sqrt[g])*Sqrt[g]) - ((a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f]
- Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(3/2)*Sqrt[g]) - (b*e*n*(a
 + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqr
t[g])])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + ((a + b*Log[c*(d + e*x)^
n])^2*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(3/
2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*S
qrt[g]))])/(2*(e*(-f)^(3/2) + d*f*Sqrt[g])*Sqrt[g]) + (b*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*
(-f)^(3/2)*Sqrt[g]) - (b^2*e*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
 + d*Sqrt[g])])/(2*f*(e*Sqrt[-f] + d*Sqrt[g])*Sqrt[g]) - (b*n*(a + b*Log[c*
(d + e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*
(-f)^(3/2)*Sqrt[g]) - (b^2*n^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f]
```

```
 - d*Sqrt[g]))])/(2*(-f)^(3/2)*Sqrt[g]) + (b^2*n^2*PolyLog[3, (Sqrt[g]*(d +
 e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f)^(3/2)*Sqrt[g])
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}\,dx = \int \left(-\frac{g(a+b\log(c(d+ex)^n))^2}{4f\left(\sqrt{-f}\sqrt{g}-gx\right)^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{4f\left(\sqrt{-f}\sqrt{g}+gx\right)^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{2f\left(-fg-g^2x^2\right)}\right.$$

$$= -\frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{\left(\sqrt{-f}\sqrt{g}-gx\right)^2}dx}{4f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{\left(\sqrt{-f}\sqrt{g}+gx\right)^2}dx}{4f} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{-fg-g^2x^2}dx}{2f}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{g\int\left(-\frac{\sqrt{-f}(a+b\log}{2fg(\sqrt{}}\right.}{}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{ben(a+b\log(}{2f(}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{ben(a+b\log(}{2f(}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{ben(a+b\log(}{2f(}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{ben(a+b\log(}{2f(}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}+d\sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g}x\right)} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{4f\left(e\sqrt{-f}-d\sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g}x\right)} - \frac{ben(a+b\log(}{2f(}$$

Mathematica [C] time = 2.62324, size = 1143, normalized size = 1.39

$$b^2\left(-\frac{\sqrt{f}\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)\right)}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)} + \frac{\sqrt{f}\left(\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+2ie\left(i\sqrt{g}x+\sqrt{f}\right)\log\left(\frac{e\left(i\sqrt{g}x+\sqrt{f}\right)}{e\sqrt{f}-id\sqrt{g}}\right.\right.\right.}{\left(e\sqrt{f}-id\sqrt{g}\right)\left(i\sqrt{g}x+\sqrt{f}\right)}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(f + g*x^2)^2,x]
```

```
[Out] ((2*Sqrt[f]*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2)
+ (2*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^
n])^2)/Sqrt[g] + (2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Sqr
t[f]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sq
rt[f] - Sqrt[g]*x]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) +
(Sqrt[f]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + e*((-I)*Sqrt[f] - Sqrt[g]*x)*Log
[I*Sqrt[f] + Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x
)) - I*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[
g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) + I*
(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sqrt[g])] +
PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])))/Sqrt[g] + (b
^2*n^2*(-((Sqrt[f]*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sqrt[f] +
Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*Sq
rt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*S
qrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)
)) + (Sqrt[f]*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x] + (2*I)*e*(Sqrt
[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[g]
)]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*S
qrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x))
+ I*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g]
)] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt
[g])] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) - I
*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] + 2
*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])] - 2
*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/Sqrt[g])/(4*f
^(3/2))
```

Maple [F] time = 11.023, size = 0, normalized size = 0.

$$\int \frac{\left(a + b \ln\left(c \left(ex + d\right)^{n}\right)\right)^{2}}{\left(g x^{2} + f\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/(g*x^2+f)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2} \log\left(\left(ex + d\right)^{n} c\right)^{2} + 2\, ab \log\left(\left(ex + d\right)^{n} c\right) + a^{2}}{g^{2} x^{4} + 2\, f g x^{2} + f^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^4 + 2*f*g*x^2 + f^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log \left((ex+d)^n c\right) + a\right)^2}{\left(gx^2 + f\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/(g*x^2 + f)^2, x)
```

3.328 $\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2\left(f+gx^2\right)^2}\,dx$

<u>**Optimal**</u>. Leaf size=919

result too large to display

```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - ((d + e*x)*(
a + b*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g*(d + e*x)*(a + b*Log[c*(d + e*x
)^n])^2)/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])*(Sqrt[-f] - Sqrt[g]*x)) + (g*(d +
e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f^2*(e*Sqrt[-f] - d*Sqrt[g])*(Sqrt[-f
] + Sqrt[g]*x)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f
] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g]))
 - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d +
 e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f*(e
*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (b^2*
e*Sqrt[g]*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^
n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5
/2)) + (b^2*e*Sqrt[g]*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sq
rt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*b*Sqrt[g]*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f
)^(5/2)) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])/(d*f^2) - (3*b^2*Sqrt[g]*n
^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/
2)) + (3*b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*(-f)^(5/2))
```

<u>**Rubi**</u> **[A]** time = 1.61293, antiderivative size = 919, normalized size of antiderivative = 1., number of steps used = 35, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {2416, 2397, 2394, 2315, 2409, 2393, 2391, 2396, 2433, 2374, 6589}

$$\frac{b^2e\sqrt{g}\text{PolyLog}\left(2,-\frac{\sqrt{g}(d+ex)}{e\sqrt{-f}-d\sqrt{g}}\right)n^2}{2f\left(e(-f)^{3/2}+df\sqrt{g}\right)}+\frac{b^2e\sqrt{g}\text{PolyLog}\left(2,\frac{\sqrt{g}(d+ex)}{\sqrt{g}d+e\sqrt{-f}}\right)n^2}{2f^2\left(\sqrt{g}d+e\sqrt{-f}\right)}+\frac{2b^2e\text{PolyLog}\left(2,\frac{ex}{d}+1\right)n^2}{df^2}-\frac{3b^2\sqrt{g}\text{PolyLo}}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)^2),x]
```


```
[Out] (2*b*e*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(d*f^2) - ((d + e*x)*(
a + b*Log[c*(d + e*x)^n])^2)/(d*f^2*x) + (g*(d + e*x)*(a + b*Log[c*(d + e*x
)^n])^2)/(4*f^2*(e*Sqrt[-f] + d*Sqrt[g])*(Sqrt[-f] - Sqrt[g]*x)) + (g*(d +
e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*f^2*(e*Sqrt[-f] - d*Sqrt[g])*(Sqrt[-f
] + Sqrt[g]*x)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(Sqrt[-f
] - Sqrt[g]*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g]))
 - (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(Sqrt[-f] - Sqrt[g]*x))/(
e*Sqrt[-f] + d*Sqrt[g])])/(4*(-f)^(5/2)) + (b*e*Sqrt[g]*n*(a + b*Log[c*(d +
 e*x)^n])*Log[(e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(2*f*(e
*(-f)^(3/2) + d*f*Sqrt[g])) + (3*Sqrt[g]*(a + b*Log[c*(d + e*x)^n])^2*Log[(
e*(Sqrt[-f] + Sqrt[g]*x))/(e*Sqrt[-f] - d*Sqrt[g])])/(4*(-f)^(5/2)) + (b^2*
e*Sqrt[g]*n^2*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/
(2*f*(e*(-f)^(3/2) + d*f*Sqrt[g])) + (3*b*Sqrt[g]*n*(a + b*Log[c*(d + e*x)^
n])*PolyLog[2, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5
/2)) + (b^2*e*Sqrt[g]*n^2*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sq
```

```
rt[g])])/(2*f^2*(e*Sqrt[-f] + d*Sqrt[g])) - (3*b*Sqrt[g]*n*(a + b*Log[c*(d
+ e*x)^n])*PolyLog[2, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqrt[g])])/(2*(-f
)^(5/2)) + (2*b^2*e*n^2*PolyLog[2, 1 + (e*x)/d])/(d*f^2) - (3*b^2*Sqrt[g]*n
^2*PolyLog[3, -((Sqrt[g]*(d + e*x))/(e*Sqrt[-f] - d*Sqrt[g]))])/(2*(-f)^(5/
2)) + (3*b^2*Sqrt[g]*n^2*PolyLog[3, (Sqrt[g]*(d + e*x))/(e*Sqrt[-f] + d*Sqr
t[g])])/(2*(-f)^(5/2))
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2(f+gx^2)^2}dx = \int \left(\frac{(a+b\log(c(d+ex)^n))^2}{f^2x^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{f(f+gx^2)^2} - \frac{g(a+b\log(c(d+ex)^n))^2}{f^2(f+gx^2)}\right) d$$

$$= \frac{\int \frac{(a+b\log(c(d+ex)^n))^2}{x^2}dx}{f^2} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{f+gx^2}dx}{f^2} - \frac{g\int \frac{(a+b\log(c(d+ex)^n))^2}{(f+gx^2)^2}dx}{f}$$

$$= -\frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} - \frac{g\int \left(\frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}-\sqrt{g}x)} + \frac{\sqrt{-f}(a+b\log(c(d+ex)^n))^2}{2f(\sqrt{-f}+\sqrt{g}x)}\right) dx}{f^2}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g\int \frac{(a+b\log(c}{\sqrt{-f}}}{2(-}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g(d+ex)(a}{4f^2(e\sqrt{-f}}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g(d+ex)(a}{4f^2(e\sqrt{-f}}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g(d+ex)(a}{4f^2(e\sqrt{-f}}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g(d+ex)(a}{4f^2(e\sqrt{-f}}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g(d+ex)(a}{4f^2(e\sqrt{-f}}$$

$$= \frac{2ben\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{df^2} - \frac{(d+ex)(a+b\log(c(d+ex)^n))^2}{df^2x} + \frac{g(d+ex)(a}{4f^2(e\sqrt{-f}}$$

Mathematica [C] time = 3.19412, size = 1304, normalized size = 1.42

$$b^2\left(\frac{\sqrt{f}\sqrt{g}\left(-\sqrt{g}(d+ex)\log^2(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\log\left(\frac{e\left(\sqrt{f}-i\sqrt{g}x\right)}{i\sqrt{g}d+e\sqrt{f}}\right)\log(d+ex)+2e\left(\sqrt{g}x+i\sqrt{f}\right)\text{PolyLog}\left(2,\frac{i\sqrt{g}(d+ex)}{i\sqrt{g}d+e\sqrt{f}}\right)\right)}{\left(i\sqrt{g}d+e\sqrt{f}\right)\left(\sqrt{f}-i\sqrt{g}x\right)} - \frac{\sqrt{f}\sqrt{g}\left(\log(d+ex)\left(\sqrt{g}(d+ex)\log(d+ex)+\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2/(x^2*(f + g*x^2)^2),x]
```

```
[Out] ((-4*Sqrt[f]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/x - (2*Sqrt[f
]*g*x*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(f + g*x^2) - 6*Sqrt
[g]*ArcTan[(Sqrt[g]*x)/Sqrt[f]]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])^2 + 2*b*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((4*Sqrt[f]*(e*x
*Log[x] - (d + e*x)*Log[d + e*x]))/(d*x) - (Sqrt[f]*Sqrt[g]*(Sqrt[g]*(d + e
*x)*Log[d + e*x] + I*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[I*Sqrt[f] - Sqrt[g]*x]))
/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] + I*Sqrt[g]*x)) + (Sqrt[f]*Sqrt[g]*(-(
Sqrt[g]*(d + e*x)*Log[d + e*x]) + e*(I*Sqrt[f] + Sqrt[g]*x)*Log[I*Sqrt[f] +
 Sqrt[g]*x]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sqrt[g]*x)) + (3*I)*S
qrt[g]*(Log[d + e*x]*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f] - I*d*Sqrt[
g])] + PolyLog[2, ((-I)*Sqrt[g]*(d + e*x))/(e*Sqrt[f] - I*d*Sqrt[g])]) - (3
*I)*Sqrt[g]*(Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f] + I*d*
Sqrt[g])] + PolyLog[2, (I*Sqrt[g]*(d + e*x))/(e*Sqrt[f] + I*d*Sqrt[g])])) +
 b^2*n^2*((Sqrt[f]*Sqrt[g]*(-(Sqrt[g]*(d + e*x)*Log[d + e*x]^2) + 2*e*(I*Sq
rt[f] + Sqrt[g]*x)*Log[d + e*x]*Log[(e*(Sqrt[f] - I*Sqrt[g]*x))/(e*Sqrt[f]
+ I*d*Sqrt[g])] + 2*e*(I*Sqrt[f] + Sqrt[g]*x)*PolyLog[2, (I*Sqrt[g]*(d + e*
x))/(e*Sqrt[f] + I*d*Sqrt[g])]))/((e*Sqrt[f] + I*d*Sqrt[g])*(Sqrt[f] - I*Sq
rt[g]*x)) - (Sqrt[f]*Sqrt[g]*(Log[d + e*x]*(Sqrt[g]*(d + e*x)*Log[d + e*x]
+ (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*Log[(e*(Sqrt[f] + I*Sqrt[g]*x))/(e*Sqrt[f
] - I*d*Sqrt[g])]) + (2*I)*e*(Sqrt[f] + I*Sqrt[g]*x)*PolyLog[2, (Sqrt[g]*(d
 + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])]))/((e*Sqrt[f] - I*d*Sqrt[g])*(Sqrt[f] +
 I*Sqrt[g]*x)) + (4*Sqrt[f]*(2*e*x*Log[-((e*x)/d)]*Log[d + e*x] - (d + e*x)
*Log[d + e*x]^2 + 2*e*x*PolyLog[2, 1 + (e*x)/d]))/(d*x) - (3*I)*Sqrt[g]*(Lo
g[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] + 2*
Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])] -
 2*PolyLog[3, (Sqrt[g]*(d + e*x))/((-I)*e*Sqrt[f] + d*Sqrt[g])]) + (3*I)*Sq
rt[g]*(Log[d + e*x]^2*Log[1 - (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
] + 2*Log[d + e*x]*PolyLog[2, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])
] - 2*PolyLog[3, (Sqrt[g]*(d + e*x))/(I*e*Sqrt[f] + d*Sqrt[g])])))/(4*f^(5/
2))
```

Maple [F] time = 5.175, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x^{2}\left(gx^{2}+f\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2}{g^2x^6+2\,fgx^4+f^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) + a^2)/(g^2*x
^6 + 2*f*g*x^4 + f^2*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2/x**2/(g*x**2+f)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2}{\left(gx^2+f\right)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2/x^2/(g*x^2+f)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2/((g*x^2 + f)^2*x^2), x)
```

3.329 $\int \frac{\log^3(c(a+bx)^n)}{d+ex^2} dx$

Optimal. Leaf size=477

$$\frac{3n^2 \log(c(a+bx)^n) \operatorname{PolyLog}\left(3, -\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}} - \frac{3n^2 \log(c(a+bx)^n) \operatorname{PolyLog}\left(3, \frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}} - \frac{3n \log^2(c(a+bx)^n) \operatorname{Pol}}{2\sqrt{-a}}$$

```
[Out] (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (3*n*Log[c*(a + b*x
)^n]^2*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt
[-d]*Sqrt[e]) + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(b
*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) + (3*n^2*Log[c*(a + b*x)^n]*P
olyLog[3, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[
e]) - (3*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) - (3*n^3*PolyLog[4, -((Sqrt[e]*(a + b*x))
/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) + (3*n^3*PolyLog[4, (Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rubi [A] time = 0.537332, antiderivative size = 477, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2409, 2396, 2433, 2374, 2383, 6589}

$$\frac{3n^2 \log(c(a+bx)^n) \operatorname{PolyLog}\left(3, -\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}} - \frac{3n^2 \log(c(a+bx)^n) \operatorname{PolyLog}\left(3, \frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}} - \frac{3n \log^2(c(a+bx)^n) \operatorname{Pol}}{2\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d + e*x^2),x]
```


```
[Out] (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^3*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (3*n*Log[c*(a + b*x
)^n]^2*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt
[-d]*Sqrt[e]) + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(b
*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) + (3*n^2*Log[c*(a + b*x)^n]*P
olyLog[3, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[
e]) - (3*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) - (3*n^3*PolyLog[4, -((Sqrt[e]*(a + b*x))
/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) + (3*n^3*PolyLog[4, (Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```


Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
```

```
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\log^3(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{\sqrt{-d}\log^3(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}x\right)}\right)dx$$

$$= -\frac{\int \frac{\log^3(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log^3(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{(3bn)\int \frac{\log^2(c(a+bx)^n)}{}}{2\sqrt{-}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{(3n)\,\text{Subst}\left(\int \frac{\log^2}{}\right)}{}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{3n\log^2(c(a+bx)^n}{2\sqrt{-}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{3n\log^2(c(a+bx)^n}{2\sqrt{-}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^3(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{3n\log^2(c(a+bx)^n}{2\sqrt{-}}$$

Mathematica [C] time = 0.2752, size = 754, normalized size = 1.58

$$\frac{-6in^2\log(c(a+bx)^n)\,\text{PolyLog}\left(3,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}-ib\sqrt{d}}\right) + 6in^2\log(c(a+bx)^n)\,\text{PolyLog}\left(3,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+ib\sqrt{d}}\right) + 3in\log^2(c(a+bx)^n)\,\text{Pol}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d + e*x^2),x]
```

```
[Out] (-2*n^3*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[a + b*x]^3 + 6*n^2*ArcTan[(Sqrt[e]*
x)/Sqrt[d]]*Log[a + b*x]^2*Log[c*(a + b*x)^n] - 6*n*ArcTan[(Sqrt[e]*x)/Sqrt
[d]]*Log[a + b*x]*Log[c*(a + b*x)^n]^2 + 2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[
c*(a + b*x)^n]^3 + I*n^3*Log[a + b*x]^3*Log[1 - (Sqrt[e]*(a + b*x))/((-I)*b
*Sqrt[d] + a*Sqrt[e])] - (3*I)*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1
- (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] + (3*I)*n*Log[a + b*x]*
Log[c*(a + b*x)^n]^2*Log[1 - (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e
])] - I*n^3*Log[a + b*x]^3*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqr
t[e])] + (3*I)*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1 - (Sqrt[e]*(a +
b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] - (3*I)*n*Log[a + b*x]*Log[c*(a + b*x)^n]^
2*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] + (3*I)*n*Log[c*(a
 + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] -
 (3*I)*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] +
 a*Sqrt[e])] - (6*I)*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sqrt[e]*(a + b*x))/
((-I)*b*Sqrt[d] + a*Sqrt[e])] + (6*I)*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (Sq
rt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] + (6*I)*n^3*PolyLog[4, (Sqrt[e]
```

```
*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] - (6*I)*n^3*PolyLog[4, (Sqrt[e]*(
a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])])/(2*Sqrt[d]*Sqrt[e])
```

Maple [F] time = 4.885, size = 0, normalized size = 0.

$$\int \frac{\left(\ln \left(c\left(bx+a\right)^{n}\right)\right)^{3}}{e x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(e*x^2+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^3/(e*x^2+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\log\left(\left(bx+a\right)^{n} c\right)^{3}}{e x^{2}+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(e*x^2 + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c\left(a+bx\right)^{n}\right)^{3}}{d+ex^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(e*x**2+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**3/(d + e*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^3}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d), x)
```

3.330 $\int \frac{\log^2(c(a+bx)^n)}{d+ex^2} dx$

Optimal. Leaf size=347

$$-\frac{n \log(c(a+bx)^n) \text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n \log(c(a+bx)^n) \text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n^2 \text{PolyLog}\left(3,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}-$$

```
[Out] (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*Log[c*(a + b*x)^
n]*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*S
qrt[e]) + (n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) + (n^2*PolyLog[3, -((Sqrt[e]*(a + b*x))/(
b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) - (n^2*PolyLog[3, (Sqrt[e]*(a
 + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rubi [A] time = 0.316108, antiderivative size = 347, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {2409, 2396, 2433, 2374, 6589}

$$-\frac{n \log(c(a+bx)^n) \text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n \log(c(a+bx)^n) \text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{\sqrt{-d}\sqrt{e}}+\frac{n^2 \text{PolyLog}\left(3,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{\sqrt{-d}\sqrt{e}}-$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e
])])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]^2*Log[(b*(Sqrt[-d] + Sqrt[e
]*x))/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*Log[c*(a + b*x)^
n]*PolyLog[2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*S
qrt[e]) + (n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d]
+ a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e]) + (n^2*PolyLog[3, -((Sqrt[e]*(a + b*x))/(
b*Sqrt[-d] - a*Sqrt[e]))])/(Sqrt[-d]*Sqrt[e]) - (n^2*PolyLog[3, (Sqrt[e]*(a
 + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(Sqrt[-d]*Sqrt[e])
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\log^2(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{\sqrt{-d}\log^2(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}x\right)}\right) dx$$

$$= -\frac{\int \frac{\log^2(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log^2(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}x}\,dx}{2\sqrt{-d}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{(bn)\int \frac{\log(c(a+bx)^n)\,\mathrm{l}\ldots}{a+\ldots}}{\sqrt{-d}\ldots}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{n\,\mathrm{Subst}\left(\int \frac{\log(cx^n)\ldots}{\ldots}\right)}{\ldots}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{n\log(c(a+bx)^n)\,\mathrm{I}\ldots}{\sqrt{-d}\ldots}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{n\log(c(a+bx)^n)\,\mathrm{I}\ldots}{\sqrt{-d}\ldots}$$

Mathematica [C] time = 0.153351, size = 488, normalized size = 1.41

$$\frac{2in\log(c(a+bx)^n)\,\mathrm{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}-ib\sqrt{d}}\right) - 2in\log(c(a+bx)^n)\,\mathrm{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+ib\sqrt{d}}\right) - 2in^2\mathrm{PolyLog}\left(3,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}-ib\sqrt{d}}\right) \ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d + e*x^2),x]
```

```
[Out] (2*n^2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Log[a + b*x]^2 - 4*n*ArcTan[(Sqrt[e]*x)/
Sqrt[d]]*Log[a + b*x]*Log[c*(a + b*x)^n] + 2*ArcTan[(Sqrt[e]*x)/Sqrt[d]]*Lo
g[c*(a + b*x)^n]^2 - I*n^2*Log[a + b*x]^2*Log[1 - (Sqrt[e]*(a + b*x))/((-I)
*b*Sqrt[d] + a*Sqrt[e])] + (2*I)*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 -
(Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d] + a*Sqrt[e])] + I*n^2*Log[a + b*x]^2*Lo
g[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])] - (2*I)*n*Log[a + b*x]
*Log[c*(a + b*x)^n]*Log[1 - (Sqrt[e]*(a + b*x))/(I*b*Sqrt[d] + a*Sqrt[e])]
+ (2*I)*n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/((-I)*b*Sqrt[d]
 + a*Sqrt[e])] - (2*I)*n*Log[c*(a + b*x)^n]*PolyLog[2, (Sqrt[e]*(a + b*x))/
(I*b*Sqrt[d] + a*Sqrt[e])] - (2*I)*n^2*PolyLog[3, (Sqrt[e]*(a + b*x))/((-I)
*b*Sqrt[d] + a*Sqrt[e])] + (2*I)*n^2*PolyLog[3, (Sqrt[e]*(a + b*x))/(I*b*Sq
rt[d] + a*Sqrt[e])])/(2*Sqrt[d]*Sqrt[e])
```

Maple [F] time = 4.311, size = 0, normalized size = 0.

$$\int \frac{\left(\ln \left(c\,(bx+a)^{n}\right)\right)^{2}}{e x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(e*x^2+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^2/(e*x^2+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\log\left((bx+a)^{n} c\right)^{2}}{e x^{2}+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/(e*x^2 + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c\,(a+bx)^{n}\right)^{2}}{d+e x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(e*x**2+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/(d + e*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^2}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d), x)
```

3.331 $\int \frac{\log(c(a+bx)^n)}{d+ex^2}\,dx$

Optimal. Leaf size=229

$$-\frac{n\text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{n\text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(\sqrt{-d}-}{b\sqrt{-d}-}\right.}{2\sqrt{-d}\sqrt{e}}$$

```
[Out] (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e])
])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] + Sqrt[e]*x)
)/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*PolyLog[2, -((Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt[-d]*Sqrt[e]) + (n*PolyLog[
2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```

Rubi [A] time = 0.164198, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2409, 2394, 2393, 2391}

$$-\frac{n\text{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{n\text{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(\sqrt{-d}-}{b\sqrt{-d}-}\right.}{2\sqrt{-d}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d + e*x^2),x]
```



```
[Out] (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e])
])/(2*Sqrt[-d]*Sqrt[e]) - (Log[c*(a + b*x)^n]*Log[(b*(Sqrt[-d] + Sqrt[e]*x)
)/(b*Sqrt[-d] - a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e]) - (n*PolyLog[2, -((Sqrt[e
]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))])/(2*Sqrt[-d]*Sqrt[e]) + (n*PolyLog[
2, (Sqrt[e]*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```


Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c(a+bx)^n)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\log(c(a+bx)^n)}{2d\left(\sqrt{-d}-\sqrt{e}x\right)}+\frac{\sqrt{-d}\log(c(a+bx)^n)}{2d\left(\sqrt{-d}+\sqrt{e}x\right)}\right)dx$$
$$= -\frac{\int \frac{\log(c(a+bx)^n)}{\sqrt{-d}-\sqrt{e}x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\log(c(a+bx)^n)}{\sqrt{-d}+\sqrt{e}x}\,dx}{2\sqrt{-d}}$$
$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{(bn)\int \frac{\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{a+bx}\,d}{2\sqrt{-d}\sqrt{e}}$$
$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} + \frac{n\,\mathrm{Subst}\left(\int \frac{\log\left(1+\frac{\sqrt{}}{b\sqrt{-d}}\right)}{x}\right.}{2\sqrt{-d}}$$
$$= \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{b\sqrt{-d}+a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{\log(c(a+bx)^n)\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} - \frac{n\mathrm{Li}_2\left(-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)}{2\sqrt{-d}\sqrt{e}} + \cdots$$

Mathematica [A] time = 0.0907437, size = 178, normalized size = 0.78

$$\frac{-n\mathrm{PolyLog}\left(2,-\frac{\sqrt{e}(a+bx)}{b\sqrt{-d}-a\sqrt{e}}\right)+n\mathrm{PolyLog}\left(2,\frac{\sqrt{e}(a+bx)}{a\sqrt{e}+b\sqrt{-d}}\right)+\log(c(a+bx)^n)\left(\log\left(\frac{b\left(\sqrt{-d}-\sqrt{e}x\right)}{a\sqrt{e}+b\sqrt{-d}}\right)-\log\left(\frac{b\left(\sqrt{-d}+\sqrt{e}x\right)}{b\sqrt{-d}-a\sqrt{e}}\right)\right)}{2\sqrt{-d}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d + e*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*(Log[(b*(Sqrt[-d] - Sqrt[e]*x))/(b*Sqrt[-d] + a*Sqrt[e]
)] - Log[(b*(Sqrt[-d] + Sqrt[e]*x))/(b*Sqrt[-d] - a*Sqrt[e])]) - n*PolyLog[
2, -((Sqrt[e]*(a + b*x))/(b*Sqrt[-d] - a*Sqrt[e]))] + n*PolyLog[2, (Sqrt[e]
*(a + b*x))/(b*Sqrt[-d] + a*Sqrt[e])])/(2*Sqrt[-d]*Sqrt[e])
```

Maple [C] time = 0.405, size = 419, normalized size = 1.8

$$(\ln((bx+a)^n) - n\ln(bx+a))\arctan\left(\frac{2(bx+a)e-2ae}{2b}\frac{1}{\sqrt{de}}\right)\frac{1}{\sqrt{de}} + \frac{n\ln(bx+a)}{2}\ln\left(\left(b\sqrt{-de}-(bx+a)e+ae\right)\left(b\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(e*x^2+d),x)
```

```
[Out] (ln((b*x+a)^n)-n*ln(b*x+a))/(d*e)^(1/2)*arctan(1/2*(2*(b*x+a)*e-2*a*e)/b/(d
*e)^(1/2))+1/2*n*ln(b*x+a)/(-d*e)^(1/2)*ln((b*(-d*e)^(1/2)-(b*x+a)*e+a*e)/(
b*(-d*e)^(1/2)+a*e))-1/2*n*ln(b*x+a)/(-d*e)^(1/2)*ln((b*(-d*e)^(1/2)+(b*x+a
)*e-a*e)/(b*(-d*e)^(1/2)-a*e))+1/2*n/(-d*e)^(1/2)*dilog((b*(-d*e)^(1/2)-(b*
x+a)*e+a*e)/(b*(-d*e)^(1/2)+a*e))-1/2*n/(-d*e)^(1/2)*dilog((b*(-d*e)^(1/2)+
(b*x+a)*e-a*e)/(b*(-d*e)^(1/2)-a*e))+1/2*I/(d*e)^(1/2)*arctan(x*e/(d*e)^(1/
```

```
2))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-1/2*I/(d*e)^(1/2)*arctan(x*e
/(d*e)^(1/2))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/2*I/(d*e
)^(1/2)*arctan(x*e/(d*e)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^3+1/2*I/(d*e)^(1/2)*
arctan(x*e/(d*e)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+1/(d*e)^(1/2)*ar
ctan(x*e/(d*e)^(1/2))*ln(c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)}{ex^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(e*x^2 + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c\left(a+bx\right)^n\right)}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(e*x**2+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(d + e*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(e*x^2 + d), x)
```

3.332 $\int \frac{1}{(d+ex^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=88

$$-\frac{\text{Unintegrable}\left(\frac{1}{\left(\sqrt{-d}-\sqrt{e}x\right)\log(c(a+bx)^n)},x\right)}{2\sqrt{-d}}-\frac{\text{Unintegrable}\left(\frac{1}{\left(\sqrt{-d}+\sqrt{e}x\right)\log(c(a+bx)^n)},x\right)}{2\sqrt{-d}}$$

```
[Out] -Unintegrable[1/((Sqrt[-d] - Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[-d]
) - Unintegrable[1/((Sqrt[-d] + Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[
-d])
```

Rubi [A] time = 0.114693, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)\log\left(c(a+bx)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] -Defer[Int][1/((Sqrt[-d] - Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[-d])
- Defer[Int][1/((Sqrt[-d] + Sqrt[e]*x)*Log[c*(a + b*x)^n]), x]/(2*Sqrt[-d])
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\left(d+ex^2\right)\log\left(c(a+bx)^n\right)}\,dx &= \int \left(\frac{\sqrt{-d}}{2d\left(\sqrt{-d}-\sqrt{e}x\right)\log\left(c(a+bx)^n\right)}+\frac{\sqrt{-d}}{2d\left(\sqrt{-d}+\sqrt{e}x\right)\log\left(c(a+bx)^n\right)}\right)dx\\ &= -\frac{\int \frac{1}{\left(\sqrt{-d}-\sqrt{e}x\right)\log(c(a+bx)^n)}\,dx}{2\sqrt{-d}}-\frac{\int \frac{1}{\left(\sqrt{-d}+\sqrt{e}x\right)\log(c(a+bx)^n)}\,dx}{2\sqrt{-d}}\end{aligned}$$

Mathematica [A] time = 0.395655, size = 0, normalized size = 0.

$$\int \frac{1}{\left(d+ex^2\right)\log\left(c(a+bx)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d + e*x^2)*Log[c*(a + b*x)^n]), x]
```

Maple [A] time = 0.838, size = 0, normalized size = 0.

$$\int \frac{1}{\left(ex^2+d\right)\ln\left(c\left(bx+a\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/ln(c*(b*x+a)^n),x)
```

```
[Out] int(1/(e*x^2+d)/ln(c*(b*x+a)^n),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex^2 + d)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x^2 + d)*log((b*x + a)^n*c)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(ex^2 + d)\log\left((bx + a)^n c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((e*x^2 + d)*log((b*x + a)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(d + ex^2)\log\left(c(a + bx)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/ln(c*(b*x+a)**n),x)
```

```
[Out] Integral(1/((d + e*x**2)*log(c*(a + b*x)**n)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex^2 + d)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/log(c*(b*x+a)^n),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d)*log((b*x + a)^n*c)), x)
```

3.333 $\int \frac{\log\left(c-\frac{a(1-c)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rubi [A] time = 0.130007, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2475, 2412, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c - (a*(1 - c))/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log\left(c-\frac{a(1-c)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx = -\frac{\text{Subst}\left(\int \frac{\log\left(c-\frac{a(1-c)x}{b}\right)}{\left(a+\frac{b}{x}\right)x}\,dx, x, x^{-m}\right)}{m}$$

$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c-\frac{a(1-c)x}{b}\right)}{b+ax}\,dx, x, x^{-m}\right)}{m}$$

$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{(1-c)x}{b}\right)}{x}\,dx, x, b+ax^{-m}\right)}{am}$$

$$= \frac{\text{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}$$

Mathematica [A] time = 0.0204637, size = 29, normalized size = 1.07

$$\frac{\text{PolyLog}\left(2, -\frac{(c-1)x^{-m}(a+bx^m)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c - (a*(1 - c))/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, -(((-1 + c)*(a + b*x^m))/(b*x^m))]/(a*m)
```

Maple [A] time = 0.067, size = 24, normalized size = 0.9

$$\frac{1}{am}\text{dilog}\left(c+\frac{a(-1+c)}{bx^m}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x)
```

```
[Out] 1/m/a*dilog(c+a*(-1+c)/(x^m)/b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$(cm-m)\int \frac{\log(x)}{bcxx^m + a(c-1)x}\,dx + \frac{\log(bcx^m + ac - a)\log(x) - \log(b)\log(x) - \log(x)\log(x^m)}{a} + \frac{\log(b)\log\left(\frac{bx^m+a}{b}\right)}{am} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="maxima")
```

```
[Out] (c*m - m)*integrate(log(x)/(b*c*x*x^m + a*(c - 1)*x), x) + (log(b*c*x^m + a
*c - a)*log(x) - log(b)*log(x) - log(x)*log(x^m))/a + log(b)*log((b*x^m + a
)/b)/(a*m) + (log(x^m)*log(b*x^m/a + 1) + dilog(-b*x^m/a))/(a*m) - (log(b*c
*x^m + a*c - a)*log((b*c*x^m + a*(c - 1))/a + 1) + dilog(-(b*c*x^m + a*(c -
```

```
1))/a))/(a*m)
```

Fricas [A] time = 1.56231, size = 63, normalized size = 2.33

$$\frac{\mathrm{Li}_2\left(-\frac{bcx^m+ac-a}{bx^m}+1\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="fricas")
```

```
[Out] dilog(-(b*c*x^m + a*c - a)/(b*x^m) + 1)/(a*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c-a*(1-c)/b/(x**m))/x/(a+b*x**m),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c+\frac{a(c-1)}{bx^m}\right)}{(bx^m+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c-a*(1-c)/b/(x^m))/x/(a+b*x^m),x, algorithm="giac")
```

```
[Out] integrate(log(c + a*(c - 1)/(b*x^m))/((b*x^m + a)*x), x)
```

3.334 $\int \frac{\log\left(\frac{x^{-m}\left(-a+ac+bcx^m\right)}{b}\right)}{x(a+bx^m)}\,dx$

Optimal. Leaf size=27

$$\frac{\operatorname{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rubi [A] time = 0.180217, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {2480, 2475, 2412, 2393, 2391}

$$\frac{\operatorname{PolyLog}\left(2,\frac{(1-c)(ax^{-m}+b)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(-a + a*c + b*c*x^m)/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - c)*(b + a/x^m))/b]/(a*m)
```

Rule 2480

```
Int[((a_.) + Log[(c_.)*(v_)^(p_.)]*(b_.))^(q_.)*(u_)^(r_.)*((h_.)*(x_))^(m_
.), x_Symbol] :> Int[(h*x)^m*ExpandToSum[u, x]^r*(a + b*Log[c*ExpandToSum[v
, x]^p])^q, x] /; FreeQ[{a, b, c, h, m, p, q, r}, x] && BinomialQ[{u, v}, x
] &&  !BinomialMatchQ[{u, v}, x]
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log\left(\frac{x^{-m}(-a+ac+bcx^m)}{b}\right)}{x(a+bx^m)}\,dx = \int \frac{\log\left(c+\frac{(-a+ac)x^{-m}}{b}\right)}{x(a+bx^m)}\,dx$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c+\frac{(-a+ac)x}{b}\right)}{\left(a+\frac{b}{x}\right)x}\,dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c+\frac{(-a+ac)x}{b}\right)}{b+ax}\,dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1+\frac{(-a+ac)x}{ab}\right)}{x}\,dx, x, b+ax^{-m}\right)}{am}$$
$$= \frac{\text{Li}_2\left(\frac{(1-c)(b+ax^{-m})}{b}\right)}{am}$$

Mathematica [A] time = 0.0074884, size = 29, normalized size = 1.07

$$\frac{\text{PolyLog}\left(2,-\frac{(c-1)x^{-m}(a+bx^m)}{b}\right)}{am}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(-a + a*c + b*c*x^m)/(b*x^m)]/(x*(a + b*x^m)),x]
```

```
[Out] PolyLog[2, -(((-1 + c)*(a + b*x^m))/(b*x^m))]/(a*m)
```

Maple [A] time = 0.065, size = 24, normalized size = 0.9

$$\frac{1}{am}\text{dilog}\left(c+\frac{a(-1+c)}{bx^m}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x)
```

```
[Out] 1/m/a*dilog(c+a*(-1+c)/(x^m)/b)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$(cm-m)\int \frac{\log(x)}{bcxx^m+a(c-1)x}\,dx + \frac{\log(bcx^m+ac-a)\log(x)-\log(b)\log(x)-\log(x)\log(x^m)}{a} + \frac{\log(b)\log\left(\frac{bx^m+a}{b}\right.}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="maxima")
```

```
[Out] (c*m - m)*integrate(log(x)/(b*c*x*x^m + a*(c - 1)*x), x) + (log(b*c*x^m + a
*c - a)*log(x) - log(b)*log(x) - log(x)*log(x^m))/a + log(b)*log((b*x^m + a
)/b)/(a*m) + (log(x^m)*log(b*x^m/a + 1) + dilog(-b*x^m/a))/(a*m) - (log(b*c
*x^m + a*c - a)*log((b*c*x^m + a*(c - 1))/a + 1) + dilog(-(b*c*x^m + a*(c -
 1))/a))/(a*m)
```

Fricas [A] time = 1.57642, size = 63, normalized size = 2.33

$$\frac{\mathrm{Li}_2\left(-\frac{bcx^m+ac-a}{bx^m}+1\right)}{am}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="fricas")
```

```
[Out] dilog(-(b*c*x^m + a*c - a)/(b*x^m) + 1)/(a*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-a+a*c+b*c*x**m)/b/(x**m))/x/(a+b*x**m),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\frac{bcx^m+ac-a}{bx^m}\right)}{(bx^m+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-a+a*c+b*c*x^m)/b/(x^m))/x/(a+b*x^m),x, algorithm="giac")
```

```
[Out] integrate(log((b*c*x^m + a*c - a)/(b*x^m))/((b*x^m + a)*x), x)
```

3.335 $\int \frac{\log\left(c\left(a-\frac{(d-acd)x^{-m}}{ce}\right)\right)}{x(d+ex^m)}\,dx$

Optimal. Leaf size=28

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

```
[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)
```

Rubi [A] time = 0.134979, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2475, 2412, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a - (d - a*c*d)/(c*e*x^m))]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log\left(c\left(a-\frac{(d-acd)x^{-m}}{ce}\right)\right)}{x(d+ex^m)}\,dx = -\frac{\text{Subst}\left(\int \frac{\log\left(c\left(a-\frac{(d-acd)x}{ce}\right)\right)}{\left(d+\frac{e}{x}\right)x}dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(c\left(a-\frac{(d-acd)x}{ce}\right)\right)}{e+dx}dx, x, x^{-m}\right)}{m}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log\left(1-\frac{(d-acd)x}{de}\right)}{x}dx, x, e+dx^{-m}\right)}{dm}$$
$$= \frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}$$

Mathematica [A] time = 0.0228317, size = 31, normalized size = 1.11

$$\frac{\text{PolyLog}\left(2,-\frac{(ac-1)x^{-m}(d+ex^m)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a - (d - a*c*d)/(c*e*x^m))]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, -(((-1 + a*c)*(d + e*x^m))/(e*x^m))]/(d*m)
```

Maple [A] time = 0.065, size = 28, normalized size = 1.

$$\frac{1}{md}\text{dilog}\left(ac+\frac{d(ac-1)}{ex^m}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x)
```

```
[Out] 1/m/d*dilog(a*c+d*(a*c-1)/e/(x^m))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$(acm-m)\int \frac{\log(x)}{acexx^m+(acd-d)x}\,dx + \frac{\log(acex^m+(ac-1)d)\log(x)-\log(e)\log(x)-\log(x)\log(x^m)}{d} + \frac{\log(e)\log\left(\frac{ex}{\ }\right.}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="maxima")
```

```
[Out] (a*c*m - m)*integrate(log(x)/(a*c*e*x*x^m + (a*c*d - d)*x), x) + (log(a*c*e
*x^m + (a*c - 1)*d)*log(x) - log(e)*log(x) - log(x)*log(x^m))/d + log(e)*lo
g((e*x^m + d)/e)/(d*m) + (log(x^m)*log(e*x^m/d + 1) + dilog(-e*x^m/d))/(d*m
) - (log(a*c*e*x^m + (a*c - 1)*d)*log((a*c*e*x^m + a*c*d - d)/d + 1) + dilo
```

```
g(-(a*c*e*x^m + a*c*d - d)/d))/(d*m)
```

Fricas [A] time = 1.74844, size = 72, normalized size = 2.57

$$\frac{\mathrm{Li}_2\left(-\frac{acex^m+(ac-1)d}{ex^m}+1\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="fricas")
```

```
[Out] dilog(-(a*c*e*x^m + (a*c - 1)*d)/(e*x^m) + 1)/(d*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(a+(a*c*d-d)/c/e/(x**m)))/x/(d+e*x**m),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\left(a+\frac{acd-d}{cex^m}\right)c\right)}{(ex^m+d)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(a+(a*c*d-d)/c/e/(x^m)))/x/(d+e*x^m),x, algorithm="giac")
```

```
[Out] integrate(log((a + (a*c*d - d)/(c*e*x^m))*c)/((e*x^m + d)*x), x)
```

3.336 $\int \frac{\log\left(\frac{x^{-m}\left(-d+acd+acex^m\right)}{e}\right)}{x(d+ex^m)}\,dx$

Optimal. Leaf size=28

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

```
[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)
```

Rubi [A] time = 0.182942, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {2480, 2475, 2412, 2393, 2391}

$$\frac{\text{PolyLog}\left(2,\frac{(1-ac)(dx^{-m}+e)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(-d + a*c*d + a*c*e*x^m)/(e*x^m)]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, ((1 - a*c)*(e + d/x^m))/e]/(d*m)
```

Rule 2480

```
Int[((a_.) + Log[(c_.)*(v_)^(p_.)]*(b_.))^(q_.)*(u_)^(r_.)*((h_.)*(x_))^(m_
.), x_Symbol] :> Int[(h*x)^m*ExpandToSum[u, x]^r*(a + b*Log[c*ExpandToSum[v
, x]^p])^q, x] /; FreeQ[{a, b, c, h, m, p, q, r}, x] && BinomialQ[{u, v}, x
] &&  !BinomialMatchQ[{u, v}, x]
```

Rule 2475

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))^(q_.)*(x_)^(m
_.)*((f_) + (g_.)*(x_)^(s_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[x^(Sim
plify[(m + 1)/n] - 1)*(f + g*x^(s/n))^r*(a + b*Log[c*(d + e*x)^p])^q, x], x
, x^n], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q, r, s}, x] && IntegerQ
[r] && IntegerQ[s/n] && IntegerQ[Simplify[(m + 1)/n]] && (GtQ[(m + 1)/n, 0]
 || IGtQ[q, 0])
```

Rule 2412

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)/(x_))^(q_.)*(x_)^(m_.), x_Symbol] :> Int[(g + f*x)^q*(a + b*Log[c*(d + e*
x)^n])^p, x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, q}, x] && EqQ[m, q] &&
 IntegerQ[q]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{x^{-m}(-d+acd+acex^m)}{e}\right)}{x(d+ex^m)}dx &= \int \frac{\log\left(ac+\frac{(-d+acd)x^{-m}}{e}\right)}{x(d+ex^m)}dx\\ &= -\frac{\text{Subst}\left(\int \frac{\log\left(ac+\frac{(-d+acd)x}{e}\right)}{\left(d+\frac{e}{x}\right)x}dx, x, x^{-m}\right)}{m}\\ &= -\frac{\text{Subst}\left(\int \frac{\log\left(ac+\frac{(-d+acd)x}{e}\right)}{e+dx}dx, x, x^{-m}\right)}{m}\\ &= -\frac{\text{Subst}\left(\int \frac{\log\left(1+\frac{(-d+acd)x}{de}\right)}{x}dx, x, e+dx^{-m}\right)}{dm}\\ &= \frac{\text{Li}_2\left(\frac{(1-ac)(e+dx^{-m})}{e}\right)}{dm}\end{aligned}$$

Mathematica [A] time = 0.006654, size = 31, normalized size = 1.11

$$\frac{\text{PolyLog}\left(2,-\frac{(ac-1)x^{-m}(d+ex^m)}{e}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(-d + a*c*d + a*c*e*x^m)/(e*x^m)]/(x*(d + e*x^m)),x]
```

```
[Out] PolyLog[2, -(((-1 + a*c)*(d + e*x^m))/(e*x^m))]/(d*m)
```

Maple [A] time = 0.064, size = 28, normalized size = 1.

$$\frac{1}{md}\text{dilog}\left(ac+\frac{d(ac-1)}{ex^m}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x)
```

```
[Out] 1/m/d*dilog(a*c+d*(a*c-1)/e/(x^m))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$(acm-m)\int \frac{\log(x)}{acexx^m+(acd-d)x}dx + \frac{\log(acex^m+(ac-1)d)\log(x) - \log(e)\log(x) - \log(x)\log(x^m)}{d} + \frac{\log(e)\log}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="maxim
a")
```

```
[Out] (a*c*m - m)*integrate(log(x)/(a*c*e*x*x^m + (a*c*d - d)*x), x) + (log(a*c*e
*x^m + (a*c - 1)*d)*log(x) - log(e)*log(x) - log(x)*log(x^m))/d + log(e)*lo
g((e*x^m + d)/e)/(d*m) + (log(x^m)*log(e*x^m/d + 1) + dilog(-e*x^m/d))/(d*m
) - (log(a*c*e*x^m + (a*c - 1)*d)*log((a*c*e*x^m + a*c*d - d)/d + 1) + dilo
g(-(a*c*e*x^m + a*c*d - d)/d))/(d*m)
```

Fricas [A] time = 1.66443, size = 72, normalized size = 2.57

$$\frac{\mathrm{Li}_2\left(-\frac{acex^m+(ac-1)d}{ex^m}+1\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="frica
s")
```

```
[Out] dilog(-(a*c*e*x^m + (a*c - 1)*d)/(e*x^m) + 1)/(d*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-d+a*c*d+a*c*e*x**m)/e/(x**m))/x/(d+e*x**m),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\frac{acex^m+acd-d}{ex^m}\right)}{(ex^m+d)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d+a*c*d+a*c*e*x^m)/e/(x^m))/x/(d+e*x^m),x, algorithm="giac"
)
```

```
[Out] integrate(log((a*c*e*x^m + a*c*d - d)/(e*x^m))/((e*x^m + d)*x), x)
```

3.337 $\int \frac{\log\left(\frac{2a}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=24

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rubi [A] time = 0.0309399, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {2402, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*a)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{2a}{a+bx}\right)}{a^2-b^2x^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(2ax)}{1-2ax}\,dx,x,\frac{1}{a+bx}\right)}{b}\\ &= \frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}\end{aligned}$$

Mathematica [A] time = 0.0059873, size = 27, normalized size = 1.12

$$\frac{\text{PolyLog}\left(2,\frac{bx-a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*a)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, (-a + b*x)/(a + b*x)]/(2*a*b)
```

Maple [A] time = 0.063, size = 20, normalized size = 0.8

$$\frac{1}{2\,ab}\text{dilog}\left(2\,\frac{a}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*a/(b*x+a))/(-b^2*x^2+a^2),x)
```

```
[Out] 1/2/b/a*dilog(2*a/(b*x+a))
```

Maxima [B] time = 1.03673, size = 162, normalized size = 6.75

$$\frac{1}{4}\,b\left(\frac{\log\left(bx+a\right)^2-2\,\log\left(bx+a\right)\log\left(bx-a\right)}{ab^2}+\frac{2\left(\log\left(bx+a\right)\log\left(-\frac{bx+a}{2\,a}+1\right)+\text{Li}_2\left(\frac{bx+a}{2\,a}\right)\right)}{ab^2}\right)+\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/4*b*((log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b^2) + 2*(log(b*x
+ a)*log(-1/2*(b*x + a)/a + 1) + dilog(1/2*(b*x + a)/a))/(a*b^2)) + 1/2*(lo
g(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log(2*a/(b*x + a))
```

Fricas [A] time = 1.67994, size = 50, normalized size = 2.08

$$\frac{\text{Li}_2\left(-\frac{2\,a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*a/(b*x + a) + 1)/(a*b)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{\log\left(2\right)}{-a^2+b^2x^2}\,dx-\int\frac{\log\left(\frac{a}{a+bx}\right)}{-a^2+b^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*a/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] -Integral(log(2)/(-a**2 + b**2*x**2), x) - Integral(log(a/(a + b*x))/(-a**2
 + b**2*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{2a}{bx+a}\right)}{b^2x^2 - a^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] integrate(-log(2*a/(b*x + a))/(b^2*x^2 - a^2), x)
```

3.338 $\int \frac{\log\left(\frac{2a}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=24

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rubi [A] time = 0.133237, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {2411, 2343, 2333, 2315}

$$\frac{\text{PolyLog}\left(2,1-\frac{2a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(2*a)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, 1 - (2*a)/(a + b*x)]/(2*a*b)
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2343

```
Int[((a_.) + Log[(c_.)*(x_)^(n_)]*(b_.))/((x_)*((d_) + (e_.)*(x_)^(r_.))),
x_Symbol] :> Dist[1/n, Subst[Int[(a + b*Log[c*x])/(x*(d + e*x^(r/n))), x],
x, x^n], x] /; FreeQ[{a, b, c, d, e, n, r}, x] && IntegerQ[r/n]
```

Rule 2333

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)/(x_))^(q_.)*(
x_)^(m_.), x_Symbol] :> Int[(e + d*x)^q*(a + b*Log[c*x^n])^p, x] /; FreeQ[{
a, b, c, d, e, m, n, p}, x] && EqQ[m, q] && IntegerQ[q]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\int \frac{\log\left(\frac{2a}{a+bx}\right)}{(a-bx)(a+bx)}\,dx = \frac{\text{Subst}\left(\int \frac{\log\left(\frac{2a}{x}\right)}{(2a-x)x}\,dx, x, a+bx\right)}{b}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log(2ax)}{\left(2a-\frac{1}{x}\right)x}\,dx, x, \frac{1}{a+bx}\right)}{b}$$
$$= -\frac{\text{Subst}\left(\int \frac{\log(2ax)}{-1+2ax}\,dx, x, \frac{1}{a+bx}\right)}{b}$$
$$= \frac{\text{Li}_2\left(1-\frac{2a}{a+bx}\right)}{2ab}$$

Mathematica [A] time = 0.0042426, size = 27, normalized size = 1.12

$$\frac{\text{PolyLog}\left(2, \frac{bx-a}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(2*a)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, (-a + b*x)/(a + b*x)]/(2*a*b)
```

Maple [A] time = 0.062, size = 20, normalized size = 0.8

$$\frac{1}{2\,ab}\text{dilog}\left(2\,\frac{a}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] 1/2/b/a*dilog(2*a/(b*x+a))
```

Maxima [B] time = 1.10069, size = 162, normalized size = 6.75

$$\frac{1}{4}b\left(\frac{\log(bx+a)^2 - 2\log(bx+a)\log(bx-a)}{ab^2} + \frac{2\left(\log(bx+a)\log\left(-\frac{bx+a}{2a}+1\right) + \text{Li}_2\left(\frac{bx+a}{2a}\right)\right)}{ab^2}\right) + \frac{1}{2}\left(\frac{\log(bx+a)}{ab} - \text{l}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*b*((log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b^2) + 2*(log(b*x
+ a)*log(-1/2*(b*x + a)/a + 1) + dilog(1/2*(b*x + a)/a))/(a*b^2)) + 1/2*(lo
g(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log(2*a/(b*x + a))
```

Fricas [A] time = 1.61669, size = 50, normalized size = 2.08

$$\frac{\mathrm{Li}_2\left(-\frac{2a}{bx+a}+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*dilog(-2*a/(b*x + a) + 1)/(a*b)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{\log(2)}{-a^2+b^2x^2}\,dx - \int \frac{\log\left(\frac{a}{a+bx}\right)}{-a^2+b^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] -Integral(log(2)/(-a**2 + b**2*x**2), x) - Integral(log(a/(a + b*x))/(-a**2
 + b**2*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{2a}{bx+a}\right)}{(bx+a)(bx-a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(2*a/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(-log(2*a/(b*x + a))/((b*x + a)*(b*x - a)), x)
```

3.339 $\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=37

$$\frac{\text{PolyLog}\left(2,1-\frac{a(1-c)+b(c+1)x}{a+bx}\right)}{2ab}$$

```
[Out] PolyLog[2, 1 - (a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(2*a*b)
```

Rubi [A] time = 0.0250285, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.026, Rules used = {2447}

$$\frac{\text{PolyLog}\left(2,1-\frac{a(1-c)+b(c+1)x}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, 1 - (a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(2*a*b)
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rubi steps

$$\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{a^2-b^2x^2}\,dx = \frac{\text{Li}_2\left(1-\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}$$

Mathematica [B] time = 0.187185, size = 252, normalized size = 6.81

$$\frac{2\text{PolyLog}\left(2,\frac{(c+1)(a-bx)}{2a}\right)-2\text{PolyLog}\left(2,\frac{(c+1)(a+bx)}{2ac}\right)-2\text{PolyLog}\left(2,\frac{a-bx}{2a}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)}{2ac}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-(a - a*c + b*(1 + c)*x)/(2*a*c)] - 2*Log[a - b*x]*Log[(a
- a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[(a
 - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*PolyLo
g[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c)]
```

```
)/(4*a*b)
```

Maple [A] time = 0.064, size = 24, normalized size = 0.7

$$\frac{1}{2ab}\mathrm{dilog}\left(1+c-2\frac{ac}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x)
```

```
[Out] 1/2/b/a*dilog(1+c-2*a*c/(b*x+a))
```

Maxima [B] time = 1.26546, size = 332, normalized size = 8.97

$$\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)+\frac{\log(bx+a)^2-2\log(bx+a)\log(bx-a)}{4ab}+\frac{\log(bx-a)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="max
ima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*(c + 1)*x - a*(c - 1))
/(b*x + a)) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/
2*(log(b*x - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c
 + 1)*x - a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1
) + dilog(1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x
 + a*(c + 1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b
)
```

Fricas [A] time = 1.61004, size = 76, normalized size = 2.05

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fri
cas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a*(1-c)+b*(c+1)*x)/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)}{b^2x^2-a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="gia
c")
```

```
[Out] integrate(-log((b*(c + 1)*x - a*(c - 1))/(b*x + a))/(b^2*x^2 - a^2), x)
```

3.340 $\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rubi [A] time = 0.0739229, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {2502, 2315}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx &= \frac{\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}\\ &= \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}\end{aligned}$$

Mathematica [B] time = 0.147699, size = 252, normalized size = 9.33

$$\frac{2\text{PolyLog}\left(2,\frac{(c+1)(a-bx)}{2a}\right)-2\text{PolyLog}\left(2,\frac{(c+1)(a+bx)}{2ac}\right)-2\text{PolyLog}\left(2,\frac{a-bx}{2a}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)x}{2ac}\right)\text{l}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a*(1 - c) + b*(1 + c)*x)/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-(a - a*c + b*(1 + c)*x)/(2*a*c)] - 2*Log[a - b*x]*Log[(a
- a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[(a
 - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*PolyLo
g[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c)]
)/(4*a*b)
```

Maple [A] time = 0.06, size = 24, normalized size = 0.9

$$\frac{1}{2\,ab}\mathrm{dilog}\left(1+c-2\,\frac{ac}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] 1/2/b/a*dilog(1+c-2*a*c/(b*x+a))
```

Maxima [B] time = 1.19238, size = 332, normalized size = 12.3

$$\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)+\frac{\log\left(bx+a\right)^{2}-2\,\log\left(bx+a\right)\log\left(bx-a\right)}{4\,ab}+\frac{\log\left(bx-a\right)\,\text{I}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="m
axima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*(c + 1)*x - a*(c - 1))
/(b*x + a)) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/
2*(log(b*x - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c
 + 1)*x - a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1
) + dilog(1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x
 + a*(c + 1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b
)
```

Fricas [A] time = 1.66643, size = 76, normalized size = 2.81

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="f
ricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a*(1-c)+b*(c+1)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{b(c+1)x-a(c-1)}{bx+a}\right)}{(bx+a)(bx-a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a*(1-c)+b*(1+c)*x)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="g
iac")
```

```
[Out] integrate(-log((b*(c + 1)*x - a*(c - 1))/(b*x + a))/((b*x + a)*(b*x - a)),
x)
```

3.341 $\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{a^2-b^2x^2}\,dx$

Optimal. Leaf size=27

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rubi [A] time = 0.019532, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.029, Rules used = {2447}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 - (c*(a - b*x))/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rubi steps

$$\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{a^2-b^2x^2}\,dx = \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Mathematica [B] time = 0.136351, size = 252, normalized size = 9.33

$$\frac{2\text{PolyLog}\left(2,\frac{(c+1)(a-bx)}{2a}\right)-2\text{PolyLog}\left(2,\frac{(c+1)(a+bx)}{2ac}\right)-2\text{PolyLog}\left(2,\frac{a-bx}{2a}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)}{2ac}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (c*(a - b*x))/(a + b*x)]/(a^2 - b^2*x^2),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-(a - a*c + b*(1 + c)*x)/(2*a*c)] - 2*Log[a - b*x]*Log[(a
- a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[(a
 - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*PolyLo
g[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c)]
```

```
)/(4*a*b)
```

Maple [A] time = 0.064, size = 24, normalized size = 0.9

$$\frac{1}{2\,ab}\mathrm{dilog}\left(1+c-2\,\frac{ac}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x)
```

```
[Out] 1/2/b/a*dilog(1+c-2*a*c/(b*x+a))
```

Maxima [B] time = 1.13602, size = 328, normalized size = 12.15

$$\frac{1}{2}\left(\frac{\log\left(bx+a\right)}{ab}-\frac{\log\left(bx-a\right)}{ab}\right)\log\left(\frac{(bx-a)c}{bx+a}+1\right)+\frac{\log\left(bx+a\right)^2-2\,\log\left(bx+a\right)\log\left(bx-a\right)}{4\,ab}+\frac{\log\left(bx-a\right)\log\left(\frac{b(c+1)}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*x - a)*c/(b*x + a) + 1
) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/2*(log(b*x
 - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c + 1)*x -
a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1) + dilog(
1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x + a*(c +
1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b)
```

Fricas [A] time = 1.61196, size = 76, normalized size = 2.81

$$\frac{\mathrm{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-c*(-b*x+a)/(b*x+a))/(-b**2*x**2+a**2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{(bx-a)c}{bx+a}+1\right)}{b^2x^2-a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] integrate(-log((b*x - a)*c/(b*x + a) + 1)/(b^2*x^2 - a^2), x)
```

3.342 $\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{(a-bx)(a+bx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

```
[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rubi [A] time = 0.127099, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {2517, 2502, 2315}

$$\frac{\text{PolyLog}\left(2,\frac{c(a-bx)}{a+bx}\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 - (c*(a - b*x))/(a + b*x)]/((a - b*x)*(a + b*x)),x]

[Out] PolyLog[2, (c*(a - b*x))/(a + b*x)]/(2*a*b)
```

Rule 2517

```
Int[Log[(e_.)*((f_.)*((g_) + (v_.)/(w_)))^(r_.)]^(s_.)*(u_.), x_Symbol] :>
Int[u*Log[e*((f*ExpandToSum[v + g*w, x])/ExpandToSum[w, x])^r]^s, x] /; Fre
eQ[{e, f, g, r, s}, x] && LinearQ[w, x] && (FreeQ[v, x] || LinearQ[v, x]) &
& AlgebraicFunctionQ[u, x]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(1-\frac{c(a-bx)}{a+bx}\right)}{(a-bx)(a+bx)}\,dx &= \int \frac{\log\left(\frac{a(1-c)+b(1+c)x}{a+bx}\right)}{(a-bx)(a+bx)}\,dx\\
&= \frac{\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a(1-c)+b(1+c)x}{a+bx}\right)}{2ab}\\
&= \frac{\text{Li}_2\left(\frac{c(a-bx)}{a+bx}\right)}{2ab}
\end{aligned}$$

Mathematica [B] time = 0.149156, size = 252, normalized size = 9.33

$$2\text{PolyLog}\left(2,\frac{(c+1)(a-bx)}{2a}\right)-2\text{PolyLog}\left(2,\frac{(c+1)(a+bx)}{2ac}\right)-2\text{PolyLog}\left(2,\frac{a-bx}{2a}\right)+\log^2\left(\frac{2ac}{(c+1)(a+bx)}\right)+2\log\left(-\frac{a(-c)+a+b(c+1)}{2ac}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (c*(a - b*x))/(a + b*x)]/((a - b*x)*(a + b*x)),x]
```

```
[Out] (Log[(2*a*c)/((1 + c)*(a + b*x))]^2 - 2*Log[a - b*x]*Log[(a + b*x)/(2*a)] +
 2*Log[a - b*x]*Log[(a - a*c + b*(1 + c)*x)/(2*a)] + 2*Log[(2*a*c)/((1 + c)
*(a + b*x))]*Log[-(a - a*c + b*(1 + c)*x)/(2*a*c)] - 2*Log[a - b*x]*Log[(a
- a*c + b*(1 + c)*x)/(a + b*x)] - 2*Log[(2*a*c)/((1 + c)*(a + b*x))]*Log[(a
 - a*c + b*(1 + c)*x)/(a + b*x)] - 2*PolyLog[2, (a - b*x)/(2*a)] + 2*PolyLo
g[2, ((1 + c)*(a - b*x))/(2*a)] - 2*PolyLog[2, ((1 + c)*(a + b*x))/(2*a*c)]
)/(4*a*b)
```

Maple [A] time = 0.066, size = 24, normalized size = 0.9

$$\frac{1}{2\,ab}\text{dilog}\left(1+c-2\,\frac{ac}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] 1/2/b/a*dilog(1+c-2*a*c/(b*x+a))
```

Maxima [B] time = 1.12341, size = 328, normalized size = 12.15

$$\frac{1}{2}\left(\frac{\log(bx+a)}{ab}-\frac{\log(bx-a)}{ab}\right)\log\left(\frac{(bx-a)c}{bx+a}+1\right)+\frac{\log(bx+a)^2-2\,\log(bx+a)\log(bx-a)}{4\,ab}+\frac{\log(bx-a)\log\left(\frac{b(\cdots}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(log(b*x + a)/(a*b) - log(b*x - a)/(a*b))*log((b*x - a)*c/(b*x + a) + 1
) + 1/4*(log(b*x + a)^2 - 2*log(b*x + a)*log(b*x - a))/(a*b) + 1/2*(log(b*x
 - a)*log(1/2*(b*(c + 1)*x - a*(c + 1))/a + 1) + dilog(-1/2*(b*(c + 1)*x -
a*(c + 1))/a))/(a*b) + 1/2*(log(b*x + a)*log(-1/2*(b*x + a)/a + 1) + dilog(
1/2*(b*x + a)/a))/(a*b) - 1/2*(log(b*x + a)*log(-1/2*(b*(c + 1)*x + a*(c +
1))/(a*c) + 1) + dilog(1/2*(b*(c + 1)*x + a*(c + 1))/(a*c)))/(a*b)
```

Fricas [A] time = 1.55632, size = 76, normalized size = 2.81

$$\frac{\text{Li}_2\left(\frac{ac-(bc+b)x-a}{bx+a}+1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*dilog((a*c - (b*c + b)*x - a)/(b*x + a) + 1)/(a*b)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\log\left(\frac{(bx-a)c}{bx+a}+1\right)}{(bx+a)(bx-a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(1-c*(-b*x+a)/(b*x+a))/(-b*x+a)/(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(-log((b*x - a)*c/(b*x + a) + 1)/((b*x + a)*(b*x - a)), x)
```

3.343 $\int \frac{\log^3(c(a+bx)^n)}{dx+ex^2}\,dx$

Optimal. Leaf size=238

$$\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{6n^2\text{PolyLog}\left(3,\frac{bx}{a}+1\right)\log}{d}$$

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^3)/d - (Log[c*(a + b*x)^n]^3*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, -((e*(a + b*
x))/(b*d - a*e))])/d + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, 1 + (b*x)/a])/d
 + (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d -
(6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, 1 + (b*x)/a])/d - (6*n^3*PolyLog[4, -(
(e*(a + b*x))/(b*d - a*e))])/d + (6*n^3*PolyLog[4, 1 + (b*x)/a])/d
```

Rubi [A] time = 0.35135, antiderivative size = 238, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {1593, 2416, 2396, 2433, 2374, 2383, 6589}

$$\frac{6n^2\log\left(c(a+bx)^n\right)\text{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{3n\log^2\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\frac{6n^2\text{PolyLog}\left(3,\frac{bx}{a}+1\right)\log}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^3)/d - (Log[c*(a + b*x)^n]^3*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, -((e*(a + b*
x))/(b*d - a*e))])/d + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, 1 + (b*x)/a])/d
 + (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d -
(6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, 1 + (b*x)/a])/d - (6*n^3*PolyLog[4, -(
(e*(a + b*x))/(b*d - a*e))])/d + (6*n^3*PolyLog[4, 1 + (b*x)/a])/d
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3\left(c(a+bx)^n\right)}{dx+ex^2}\,dx = \int \frac{\log^3\left(c(a+bx)^n\right)}{x(d+ex)}\,dx$$

$$= \int \left(\frac{\log^3\left(c(a+bx)^n\right)}{dx} - \frac{e\log^3\left(c(a+bx)^n\right)}{d(d+ex)}\right)dx$$

$$= \frac{\int \frac{\log^3(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log^3(c(a+bx)^n)}{d+ex}\,dx}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d} - \frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(3bn)\int \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{a+bx}\,dx}{d} +$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d} - \frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(3n)\,\mathrm{Subst}\left(\int \frac{\log^2(cx^n)\log\left(-\frac{b\left(-\frac{a}{b}+\frac{x}{b}\right)}{a}\right)}{x}\right.}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d} - \frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2\left(c(a+bx)^n\right)\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right.}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d} - \frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2\left(c(a+bx)^n\right)\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right.}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^3\left(c(a+bx)^n\right)}{d} - \frac{\log^3\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{3n\log^2\left(c(a+bx)^n\right)\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right.}{d}$$

Mathematica [B] time = 0.210555, size = 494, normalized size = 2.08

$$-3n^2\left(n\log(a+bx)-\log\left(c(a+bx)^n\right)\right)\left(2\text{PolyLog}\left(3,\frac{e(a+bx)}{ae-bd}\right)-2\log(a+bx)\text{PolyLog}\left(2,\frac{e(a+bx)}{ae-bd}\right)-2\text{PolyLog}\left(3,\frac{bx}{a}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d*x + e*x^2),x]
```

```
[Out] (-(Log[x]*(n*Log[a + b*x] - Log[c*(a + b*x)^n])^3) + (n*Log[a + b*x] - Log[
c*(a + b*x)^n])^3*Log[d + e*x] + 3*n*(-(n*Log[a + b*x]) + Log[c*(a + b*x)^n
])^2*(Log[x]*(Log[a + b*x] - Log[1 + (b*x)/a]) - Log[a + b*x]*Log[(b*(d + e
*x))/(b*d - a*e)] - PolyLog[2, -((b*x)/a)] - PolyLog[2, (e*(a + b*x))/(-(b*
d) + a*e)]) - 3*n^2*(n*Log[a + b*x] - Log[c*(a + b*x)^n])*(Log[-((b*x)/a)]*
Log[a + b*x]^2 - Log[a + b*x]^2*Log[(b*(d + e*x))/(b*d - a*e)] - 2*Log[a +
b*x]*PolyLog[2, (e*(a + b*x))/(-(b*d) + a*e)] + 2*Log[a + b*x]*PolyLog[2, 1
 + (b*x)/a] + 2*PolyLog[3, (e*(a + b*x))/(-(b*d) + a*e)] - 2*PolyLog[3, 1 +
 (b*x)/a]) + n^3*(Log[-((b*x)/a)]*Log[a + b*x]^3 - Log[a + b*x]^3*Log[(b*(d
 + e*x))/(b*d - a*e)] - 3*Log[a + b*x]^2*PolyLog[2, (e*(a + b*x))/(-(b*d) +
 a*e)] + 3*Log[a + b*x]^2*PolyLog[2, 1 + (b*x)/a] + 6*Log[a + b*x]*PolyLog[
3, (e*(a + b*x))/(-(b*d) + a*e)] - 6*Log[a + b*x]*PolyLog[3, 1 + (b*x)/a] -
 6*PolyLog[4, (e*(a + b*x))/(-(b*d) + a*e)] + 6*PolyLog[4, 1 + (b*x)/a]))/d
```

Maple [C] time = 1.178, size = 12205, normalized size = 51.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(e*x^2+d*x),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(\left(bx+a\right)^n c\right)^3}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left(\left(bx+a\right)^n c\right)^3}{ex^2+dx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(e*x^2 + d*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c(a+bx)^n\right)^3}{x(d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**3/(x*(d + e*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^3}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(e*x^2 + d*x), x)
```

3.344 $\int \frac{\log^2(c(a+bx)^n)}{dx+ex^2} dx$

Optimal. Leaf size=168

$$-\frac{2n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{2n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)\log\left(c(a+bx)^n\right)}{d}+\frac{2n^2\text{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\cdots$$

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^2)/d - (Log[c*(a + b*x)^n]^2*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (2*n*Log[c*(a + b*x)^n]*PolyLog[2, -((e*(a + b*x)
)/(b*d - a*e))])/d + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, 1 + (b*x)/a])/d + (
2*n^2*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d - (2*n^2*PolyLog[3, 1 + (
b*x)/a])/d
```

Rubi [A] time = 0.248068, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {1593, 2416, 2396, 2433, 2374, 6589}

$$-\frac{2n\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{2n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)\log\left(c(a+bx)^n\right)}{d}+\frac{2n^2\text{PolyLog}\left(3,-\frac{e(a+bx)}{bd-ae}\right)}{d}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n]^2)/d - (Log[c*(a + b*x)^n]^2*Log[(b*(d
+ e*x))/(b*d - a*e)])/d - (2*n*Log[c*(a + b*x)^n]*PolyLog[2, -((e*(a + b*x)
)/(b*d - a*e))])/d + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, 1 + (b*x)/a])/d + (
2*n^2*PolyLog[3, -((e*(a + b*x))/(b*d - a*e))])/d - (2*n^2*PolyLog[3, 1 + (
b*x)/a])/d
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{dx+ex^2}\,dx = \int \frac{\log^2(c(a+bx)^n)}{x(d+ex)}\,dx$$

$$= \int \left(\frac{\log^2(c(a+bx)^n)}{dx} - \frac{e\log^2(c(a+bx)^n)}{d(d+ex)}\right)dx$$

$$= \frac{\int \frac{\log^2(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log^2(c(a+bx)^n)}{d+ex}\,dx}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(2bn)\int \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{a+bx}\,dx}{d} +$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(2n)\,\mathrm{Subst}\left(\int \frac{\log(cx^n)\log\left(-\frac{b\left(-\frac{a}{b}+\frac{x}{b}\right)}{a}\right)}{x}\right.}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{2n\log(c(a+bx)^n)\,\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}$$

$$= \frac{\log\left(-\frac{bx}{a}\right)\log^2(c(a+bx)^n)}{d} - \frac{\log^2(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{2n\log(c(a+bx)^n)\,\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d}$$

Mathematica [A] time = 0.134332, size = 292, normalized size = 1.74

$$\frac{-2n\left(n\log(a+bx)-\log\left(c(a+bx)^n\right)\right)\left(-\mathrm{PolyLog}\left(2,\frac{e(a+bx)}{ae-bd}\right)-\mathrm{PolyLog}\left(2,-\frac{bx}{a}\right)-\log(a+bx)\log\left(\frac{b(d+ex)}{bd-ae}\right)+\log(x)\left(\log\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d*x + e*x^2),x]
```

```
[Out] (Log[x]*(-(n*Log[a + b*x]) + Log[c*(a + b*x)^n])^2 - (-(n*Log[a + b*x]) + L
og[c*(a + b*x)^n])^2*Log[d + e*x] - 2*n*(n*Log[a + b*x] - Log[c*(a + b*x)^n
])*(Log[x]*(Log[a + b*x] - Log[1 + (b*x)/a]) - Log[a + b*x]*Log[(b*(d + e*x
))/(b*d - a*e)] - PolyLog[2, -((b*x)/a)] - PolyLog[2, (e*(a + b*x))/(-(b*d)
```

```
 + a*e)]) + n^2*(Log[-((b*x)/a)]*Log[a + b*x]^2 - Log[a + b*x]^2*Log[(b*(d
+ e*x))/(b*d - a*e)] - 2*Log[a + b*x]*PolyLog[2, (e*(a + b*x))/(-(b*d) + a*
e)] + 2*Log[a + b*x]*PolyLog[2, 1 + (b*x)/a] + 2*PolyLog[3, (e*(a + b*x))/(
-(b*d) + a*e)] - 2*PolyLog[3, 1 + (b*x)/a]))/d
```

Maple [C] time = 0.793, size = 2679, normalized size = 16.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(e*x^2+d*x),x)
```

```
[Out] -I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)
-2*n/d*dilog(1/a*(b*x+a))*ln(c)+2*n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*
ln(c)+2*n*(ln((b*x+a)^n)-n*ln(b*x+a))/d*ln(b*x+a)*ln(-x*b/a)-2*n*(ln((b*x+a
)^n)-n*ln(b*x+a))/d*ln(b*x+a)*ln(((b*x+a)*e-a*e+b*d)/(-a*e+b*d))+(ln((b*x+a
)^n)-n*ln(b*x+a))^2/d*ln(b*x)-(ln((b*x+a)^n)-n*ln(b*x+a))^2/d*ln((b*x+a)*e-
a*e+b*d)+I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^3+1/2/d*ln(x)*Pi^2*csgn
(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)-1/4/d*ln(x)*Pi^2*csgn(I*(b*
x+a)^n)^2*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)^2+1/4/d*ln(e*x+d)*Pi^2*csgn(I*(b*
x+a)^n)^2*csgn(I*c*(b*x+a)^n)^4-I/d*ln(x)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^3+1/
2/d*ln(x)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)^2-1/d*ln(x
)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)+1/d*ln(e*x+d)*Pi^2
*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)+2*n/d*ln(e*x+d)*ln((b*(e
*x+d)+a*e-b*d)/(a*e-b*d))*ln(c)-2*n/d*ln(x)*ln(1/a*(b*x+a))*ln(c)-I*n/d*ln(
x)*ln(1/a*(b*x+a))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-I/d*ln(x)*ln(
c)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-I*n/d*dilog((b*(e*x+d
)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+I/
d*ln(e*x+d)*ln(c)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)-1/2/d*
ln(e*x+d)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^3*csgn(I*c)^2+I/d*ln(e
*x+d)*ln((b*x+a)^n)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)+I*n/
d*ln(e*x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn
(I*c)+I*n/d*ln(e*x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n
)*csgn(I*c*(b*x+a)^n)^2+I*n/d*dilog(1/a*(b*x+a))*Pi*csgn(I*(b*x+a)^n)*csgn(
I*c*(b*x+a)^n)*csgn(I*c)-I*n/d*ln(x)*ln(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)
^2*csgn(I*c)-I*n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)
^n)^3+1/d*ln(x)*ln(c)^2-2/d*ln(e*x+d)*ln((b*x+a)^n)*ln(c)+2*ln((b*x+a)^n)/d
*ln(x)*ln(c)+2*n*(ln((b*x+a)^n)-n*ln(b*x+a))/d*dilog(-x*b/a)-2*n*(ln((b*x+a
)^n)-n*ln(b*x+a))/d*dilog(((b*x+a)*e-a*e+b*d)/(-a*e+b*d))-1/4/d*ln(x)*Pi^2*
csgn(I*c*(b*x+a)^n)^6+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^6+n^2/d*ln(b
*x+a)^2*ln(1-1/a*(b*x+a))+2*n^2/d*ln(b*x+a)*polylog(2,1/a*(b*x+a))-n^2/d*ln
(b*x+a)^2*ln(1+e*(b*x+a)/(-a*e+b*d))-2*n^2/d*ln(b*x+a)*polylog(2,-e*(b*x+a)
/(-a*e+b*d))+I*n/d*ln(x)*ln(1/a*(b*x+a))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x
+a)^n)*csgn(I*c)-I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^3-I*n/d*ln(
e*x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x
+a)^n)*csgn(I*c)-1/2/d*ln(e*x+d)*Pi^2*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^
n)^3*csgn(I*c)+1/4/d*ln(e*x+d)*Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-1/4/d
*ln(x)*Pi^2*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^4+1/2/d*ln(x)*Pi^2*csgn
(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^5+1/2/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^5*
csgn(I*c)-1/4/d*ln(x)*Pi^2*csgn(I*c*(b*x+a)^n)^4*csgn(I*c)^2-2*n^2/d*polylo
g(3,1/a*(b*x+a))-1/d*ln(e*x+d)*ln(c)^2+I*n/d*dilog(1/a*(b*x+a))*Pi*csgn(I*c
*(b*x+a)^n)^3+1/4/d*ln(e*x+d)*Pi^2*csgn(I*(b*x+a)^n)^2*csgn(I*c*(b*x+a)^n)^
2*csgn(I*c)^2+I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x+a)^n)^3-1/2/d*ln
(e*x+d)*Pi^2*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^5-1/2/d*ln(e*x+d)*Pi^2*c
sgn(I*c*(b*x+a)^n)^5*csgn(I*c)-I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*c*(b*x
+a)^n)^2*csgn(I*c)-I*n/d*ln(e*x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csg
```

```
n(I*c*(b*x+a)^n)^3-I/d*ln(e*x+d)*ln(c)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a
)^n)^2+I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I*n/d*dil
og(1/a*(b*x+a))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+I*n/d*ln(x)*ln(1/a*(b*x+
a))*Pi*csgn(I*c*(b*x+a)^n)^3+2*n^2*polylog(3,-e*(b*x+a)/(-a*e+b*d))/d+I*n/d
*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I/
d*ln(e*x+d)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)-I*n/d*dilog(1/a*(b*x+a
))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+I/d*ln(x)*ln(c)*Pi*csgn(I*(b*
x+a)^n)*csgn(I*c*(b*x+a)^n)^2+I/d*ln(x)*ln(c)*Pi*csgn(I*c*(b*x+a)^n)^2*csgn
(I*c)+I*ln((b*x+a)^n)/d*ln(x)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2+I*
n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x
+a)^n)^2-I/d*ln(e*x+d)*ln((b*x+a)^n)*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^
n)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^2}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)^2}{ex^2+dx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/(e*x^2 + d*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c\left(a+bx\right)^n\right)^2}{x\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/(x*(d + e*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^2}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(e*x^2 + d*x), x)
```

3.345 $\int \frac{\log(c(a+bx)^n)}{dx+ex^2} dx$

Optimal. Leaf size=97

$$-\frac{n\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)}{d}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{d}$$

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d - (n*PolyLog[2, -((e*(a + b*x))/(b*d - a*e))])/d + (n*P
olyLog[2, 1 + (b*x)/a])/d
```

Rubi [A] time = 0.123538, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 9, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.409, Rules used = {1593, 36, 29, 31, 2416, 2394, 2315, 2393, 2391}

$$-\frac{n\text{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d}+\frac{n\text{PolyLog}\left(2,\frac{bx}{a}+1\right)}{d}-\frac{\log\left(c(a+bx)^n\right)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d}+\frac{\log\left(-\frac{bx}{a}\right)\log\left(c(a+bx)^n\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d - (n*PolyLog[2, -((e*(a + b*x))/(b*d - a*e))])/d + (n*P
olyLog[2, 1 + (b*x)/a])/d
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\log(c(a+bx)^n)}{dx+ex^2}\,dx &= \int \frac{\log(c(a+bx)^n)}{x(d+ex)}\,dx\\
&= \int \left(\frac{\log(c(a+bx)^n)}{dx} - \frac{e\log(c(a+bx)^n)}{d(d+ex)}\right)dx\\
&= \frac{\int \frac{\log(c(a+bx)^n)}{x}\,dx}{d} - \frac{e\int \frac{\log(c(a+bx)^n)}{d+ex}\,dx}{d}\\
&= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{(bn)\int \frac{\log\left(-\frac{bx}{a}\right)}{a+bx}\,dx}{d} + \frac{(bn)\int \cdots}{d}\\
&= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} + \frac{n\mathrm{Li}_2\left(1+\frac{bx}{a}\right)}{d} + \frac{n\,\mathrm{Subst}\left(\int \cdots\right)}{\cdots}\\
&= \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} - \frac{n\mathrm{Li}_2\left(-\frac{e(a+bx)}{bd-ae}\right)}{d} + \frac{n\mathrm{Li}_2\left(1+\frac{bx}{a}\right)}{d}
\end{aligned}
$$

Mathematica [A] time = 0.0217651, size = 98, normalized size = 1.01

$$
-\frac{n\mathrm{PolyLog}\left(2,-\frac{e(a+bx)}{bd-ae}\right)}{d} + \frac{n\mathrm{PolyLog}\left(2,\frac{a+bx}{a}\right)}{d} - \frac{\log(c(a+bx)^n)\log\left(\frac{b(d+ex)}{bd-ae}\right)}{d} + \frac{\log\left(-\frac{bx}{a}\right)\log(c(a+bx)^n)}{d}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d*x + e*x^2),x]
```

```
[Out] (Log[-((b*x)/a)]*Log[c*(a + b*x)^n])/d - (Log[c*(a + b*x)^n]*Log[(b*(d + e*
x))/(b*d - a*e)])/d + (n*PolyLog[2, (a + b*x)/a])/d - (n*PolyLog[2, -((e*(a
 + b*x))/(b*d - a*e))])/d
```

Maple [C] time = 0.519, size = 420, normalized size = 4.3

$$-\frac{\ln (ex+d)\ln \left((bx+a)^{n}\right)}{d}+\frac{\ln \left((bx+a)^{n}\right)\ln (x)}{d}-\frac{n}{d}\mathrm{dilog}\left(\frac{bx+a}{a}\right)-\frac{n\ln (x)}{d}\ln \left(\frac{bx+a}{a}\right)+\frac{n}{d}\mathrm{dilog}\left(\frac{b(ex+d)+ae-}{ae-bd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(e*x^2+d*x),x)
```

```
[Out] -1/d*ln(e*x+d)*ln((b*x+a)^n)+ln((b*x+a)^n)/d*ln(x)-n/d*dilog(1/a*(b*x+a))-n
/d*ln(x)*ln(1/a*(b*x+a))+n/d*dilog((b*(e*x+d)+a*e-b*d)/(a*e-b*d))+n/d*ln(e*
x+d)*ln((b*(e*x+d)+a*e-b*d)/(a*e-b*d))-1/2*I*Pi*csgn(I*c*(b*x+a)^n)^3/d*ln(
x)-1/2*I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2/d*ln(e*x+d)+1/2*I*Pi*cs
gn(I*c*(b*x+a)^n)^3/d*ln(e*x+d)+1/2*I*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)/d*
ln(x)-1/2*I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)/d*ln(x)+1/2*
I*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2/d*ln(x)+1/2*I*Pi*csgn(I*(b*x+a
)^n)*csgn(I*c*(b*x+a)^n)*csgn(I*c)/d*ln(e*x+d)-1/2*I*Pi*csgn(I*c*(b*x+a)^n)
^2*csgn(I*c)/d*ln(e*x+d)-ln(c)/d*ln(e*x+d)+ln(c)/d*ln(x)
```

Maxima [A] time = 1.33211, size = 166, normalized size = 1.71

$$-bn\left(\frac{\log\left(\frac{bx}{a}+1\right)\log (x)+\mathrm{Li}_2\left(-\frac{bx}{a}\right)}{bd}-\frac{\log (ex+d)\log\left(-\frac{bex+bd}{bd-ae}+1\right)+\mathrm{Li}_2\left(\frac{bex+bd}{bd-ae}\right)}{bd}\right)-\left(\frac{\log (ex+d)}{d}-\frac{\log (x)}{d}\right)\log\left((bx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="maxima")
```

```
[Out] -b*n*((log(b*x/a + 1)*log(x) + dilog(-b*x/a))/(b*d) - (log(e*x + d)*log(-(b
*e*x + b*d)/(b*d - a*e) + 1) + dilog((b*e*x + b*d)/(b*d - a*e)))/(b*d)) - (
log(e*x + d)/d - log(x)/d)*log((b*x + a)^n*c)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log\left((bx+a)^{n}c\right)}{ex^{2}+dx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(e*x^2 + d*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log\left(c\,(a+bx)^{n}\right)}{x\,(d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(e*x**2+d*x),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(x*(d + e*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)}{ex^2+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(e*x^2+d*x),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(e*x^2 + d*x), x)
```

3.346 $\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=51

$$\frac{\text{Unintegrable}\left(\frac{1}{x\log(c(a+bx)^n)},x\right)}{d}-\frac{e\text{Unintegrable}\left(\frac{1}{(d+ex)\log(c(a+bx)^n)},x\right)}{d}$$

```
[Out] Unintegrable[1/(x*Log[c*(a + b*x)^n]), x]/d - (e*Unintegrable[1/((d + e*x)*
Log[c*(a + b*x)^n]), x])/d
```

Rubi [A] time = 0.10989, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Defer[Int][1/(x*Log[c*(a + b*x)^n]), x]/d - (e*Defer[Int][1/((d + e*x)*Log[
c*(a + b*x)^n]), x])/d
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx &= \int \frac{1}{x(d+ex)\log(c(a+bx)^n)}\,dx\\ &= \int \left(\frac{1}{dx\log(c(a+bx)^n)}-\frac{e}{d(d+ex)\log(c(a+bx)^n)}\right)dx\\ &= \frac{\int \frac{1}{x\log(c(a+bx)^n)}\,dx}{d}-\frac{e\int \frac{1}{(d+ex)\log(c(a+bx)^n)}\,dx}{d}\end{aligned}$$

Mathematica [A] time = 0.625283, size = 0, normalized size = 0.

$$\int \frac{1}{(dx+ex^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d*x + e*x^2)*Log[c*(a + b*x)^n]), x]
```

Maple [A] time = 0.825, size = 0, normalized size = 0.

$$\int \frac{1}{(ex^2+dx)\ln\left(c(bx+a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d*x)/ln(c*(b*x+a)^n),x)
```

```
[Out] int(1/(e*x^2+d*x)/ln(c*(b*x+a)^n),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(ex^2 + dx\right)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x^2 + d*x)*log((b*x + a)^n*c)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{\left(ex^2 + dx\right)\log\left((bx + a)^n c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((e*x^2 + d*x)*log((b*x + a)^n*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x\,(d + ex)\log\left(c\,(a + bx)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d*x)/ln(c*(b*x+a)**n),x)
```

```
[Out] Integral(1/(x*(d + e*x)*log(c*(a + b*x)**n)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(ex^2 + dx\right)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d*x)/log(c*(b*x+a)^n),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d*x)*log((b*x + a)^n*c)), x)
```

3.347 $\int \frac{\log^3(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=500

$$-\frac{6n^2\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{6n^2\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{3n\log^2\left(c(a\ldots\right.}{}$$

```
[Out] (Log[c*(a + b*x)^n]^3*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^3*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(
2*a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (3*n*Log[c*(a + b*
x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sq
rt[e^2 - 4*d*f] - (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a
*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] + (6*n^2*Log[c*(a + b*x
)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[
e^2 - 4*d*f] + (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f -
b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rubi [A] time = 0.700787, antiderivative size = 500, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.24, Rules used = {2418, 2396, 2433, 2374, 2383, 6589}

$$-\frac{6n^2\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}+\frac{6n^2\log\left(c(a+bx)^n\right)\mathrm{PolyLog}\left(3,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{3n\log^2\left(c(a\ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^3/(d + e*x + f*x^2),x]
```


```
[Out] (Log[c*(a + b*x)^n]^3*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^3*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (3*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(
2*a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (3*n*Log[c*(a + b*
x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sq
rt[e^2 - 4*d*f] - (6*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a
*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] + (6*n^2*Log[c*(a + b*x
)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[
e^2 - 4*d*f] + (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (6*n^3*PolyLog[4, (2*f*(a + b*x))/(2*a*f -
b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^3(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log^3(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log^3(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)}\right)dx$$

$$= \frac{(2f)\int \frac{\log^3(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log^3(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{(3bn)\int}{}$$

(3n) Sul

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} -$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} + \frac{3n\log^2}{}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} + \frac{3n\log^2}{}$$

$$= \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^3(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} + \frac{3n\log^2}{}$$

Mathematica [A] time = 0.719166, size = 993, normalized size = 1.99

$$-2\sqrt{e^2-4df}\tan^{-1}\left(\frac{e+2fx}{\sqrt{4df-e^2}}\right)\log^3(a+bx)n^3 + \sqrt{4df-e^2}\log^3(a+bx)\log\left(1-\frac{2f(a+bx)}{-eb+\sqrt{e^2-4df}b+2af}\right)n^3 - \sqrt{4df-e^2}\log^3(a$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^3/(d + e*x + f*x^2),x]
```

```
[Out] (-2*Sqrt[e^2 - 4*d*f]*n^3*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*
x]^3 + 6*Sqrt[e^2 - 4*d*f]*n^2*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a
 + b*x]^2*Log[c*(a + b*x)^n] - 6*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqr
t[-e^2 + 4*d*f]]*Log[a + b*x]*Log[c*(a + b*x)^n]^2 + 2*Sqrt[e^2 - 4*d*f]*Ar
cTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[c*(a + b*x)^n]^3 + Sqrt[-e^2 + 4*d
*f]*n^3*Log[a + b*x]^3*Log[1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2
```

```
 - 4*d*f])] - 3*Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Lo
g[1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 3*Sqrt[-e^2
 + 4*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]^2*Log[1 - (2*f*(a + b*x))/(-(b*
e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] - Sqrt[-e^2 + 4*d*f]*n^3*Log[a + b*x]^3*
Log[1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] + 3*Sqrt[-e^2
 + 4*d*f]*n^2*Log[a + b*x]^2*Log[c*(a + b*x)^n]*Log[1 + (2*f*(a + b*x))/(-2
*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] - 3*Sqrt[-e^2 + 4*d*f]*n*Log[a + b*x]*Lo
g[c*(a + b*x)^n]^2*Log[1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*
f]))] + 3*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a + b*x)^n]^2*PolyLog[2, (2*f*(a + b*
x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - 3*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a
 + b*x)^n]^2*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))
] - 6*Sqrt[-e^2 + 4*d*f]*n^2*Log[c*(a + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/
(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 6*Sqrt[-e^2 + 4*d*f]*n^2*Log[c*(a
 + b*x)^n]*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))]
+ 6*Sqrt[-e^2 + 4*d*f]*n^3*PolyLog[4, (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*S
qrt[e^2 - 4*d*f])] - 6*Sqrt[-e^2 + 4*d*f]*n^3*PolyLog[4, (2*f*(a + b*x))/(2
*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[-(e^2 - 4*d*f)^2]
```

Maple [F] time = 12.324, size = 0, normalized size = 0.

$$\int \frac{\left(\ln \left(c\,(bx+a)^{n}\right)\right)^{3}}{f\,x^{2}+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log\left((bx+a)^{n}c\right)^{3}}{fx^{2}+ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^3/(f*x^2 + e*x + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**3/(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)^3}{fx^2+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^3/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^3/(f*x^2 + e*x + d), x)
```

3.348 $\int \frac{\log^2(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=372

$$\frac{2n\log(c(a+bx)^n)\,\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n\log(c(a+bx)^n)\,\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n^2\text{PolyLog}}{\sqrt{}}$$

```
[Out] (Log[c*(a + b*x)^n]^2*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^2*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*
a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (2*n*Log[c*(a + b*x)
^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e
^2 - 4*d*f] - (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
4*d*f]))])/Sqrt[e^2 - 4*d*f] + (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b
*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rubi [A] time = 0.405532, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2418, 2396, 2433, 2374, 6589}

$$\frac{2n\log(c(a+bx)^n)\,\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n\log(c(a+bx)^n)\,\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}-\frac{2n^2\text{PolyLog}}{\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]^2/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]^2*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*
(e - Sqrt[e^2 - 4*d*f])))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]^2*Log[-
((b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f])))])
/Sqrt[e^2 - 4*d*f] + (2*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*
a*f - b*(e - Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f] - (2*n*Log[c*(a + b*x)
^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e
^2 - 4*d*f] - (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 -
4*d*f]))])/Sqrt[e^2 - 4*d*f] + (2*n^2*PolyLog[3, (2*f*(a + b*x))/(2*a*f - b
*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log^2(c(a+bx)^n)}{d+ex+fx^2}\,dx = \int \left(\frac{2f\log^2(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log^2(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)}\right)dx$$

$$= \frac{(2f)\int \frac{\log^2(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log^2(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}\,dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{(2bn)\int}{}$$

$$(2n)\,\mathrm{Sul}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - $$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} + \frac{2n\log(}{}$$

$$= \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log^2(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} + \frac{2n\log(}{}$$

Mathematica [A] time = 0.414415, size = 655, normalized size = 1.76

$$2n\sqrt{4df-e^2}\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af+b\left(\sqrt{e^2-4df}-e\right)}\right)-2n\sqrt{4df-e^2}\log\left(c(a+bx)^n\right)\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}\right.}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]^2/(d + e*x + f*x^2),x]
```

```
[Out] (2*Sqrt[e^2 - 4*d*f]*n^2*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a + b*x
]^2 - 4*Sqrt[e^2 - 4*d*f]*n*ArcTan[(e + 2*f*x)/Sqrt[-e^2 + 4*d*f]]*Log[a +
b*x]*Log[c*(a + b*x)^n] + 2*Sqrt[e^2 - 4*d*f]*ArcTan[(e + 2*f*x)/Sqrt[-e^2
+ 4*d*f]]*Log[c*(a + b*x)^n]^2 - Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[
1 - (2*f*(a + b*x))/(-(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 2*Sqrt[-e^2 +
 4*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 - (2*f*(a + b*x))/(-(b*e) +
 2*a*f + b*Sqrt[e^2 - 4*d*f])] + Sqrt[-e^2 + 4*d*f]*n^2*Log[a + b*x]^2*Log[
1 + (2*f*(a + b*x))/(-2*a*f + b*(e + Sqrt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2 + 4
*d*f]*n*Log[a + b*x]*Log[c*(a + b*x)^n]*Log[1 + (2*f*(a + b*x))/(-2*a*f + b
*(e + Sqrt[e^2 - 4*d*f]))] + 2*Sqrt[-e^2 + 4*d*f]*n*Log[c*(a + b*x)^n]*Poly
Log[2, (2*f*(a + b*x))/(2*a*f + b*(-e + Sqrt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2
+ 4*d*f]*n*Log[c*(a + b*x)^n]*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + Sq
rt[e^2 - 4*d*f]))] - 2*Sqrt[-e^2 + 4*d*f]*n^2*PolyLog[3, (2*f*(a + b*x))/(-
(b*e) + 2*a*f + b*Sqrt[e^2 - 4*d*f])] + 2*Sqrt[-e^2 + 4*d*f]*n^2*PolyLog[3,
 (2*f*(a + b*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))])/Sqrt[-(e^2 - 4*d*f)^
2]
```

Maple [F] time = 9.795, size = 0, normalized size = 0.

$$\int \frac{\left(\ln\left(c\,(bx+a)^n\right)\right)^2}{fx^2+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x)
```

```
[Out] int(ln(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)^2}{fx^2+ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)^2/(f*x^2 + e*x + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log \left(c\left(a+bx\right)^{n}\right)^{2}}{d+ex+fx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)**2/(f*x**2+e*x+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)**2/(d + e*x + f*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log \left(\left(bx+a\right)^{n}c\right)^{2}}{fx^{2}+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)^2/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)^2/(f*x^2 + e*x + d), x)
```

3.349 $\int \frac{\log(c(a+bx)^n)}{d+ex+fx^2}\,dx$

Optimal. Leaf size=243

$$\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log(c}{}$$

```
[Out] (Log[c*(a + b*x)^n]*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e
 - Sqrt[e^2 - 4*d*f]))))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]*Log[-((b*
(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))))])/Sqr
t[e^2 - 4*d*f] + (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 - 4
*d*f]))])/Sqrt[e^2 - 4*d*f] - (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e +
 Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rubi [A] time = 0.228893, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {2418, 2394, 2393, 2391}

$$\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{n\text{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right)}{\sqrt{e^2-4df}}+\frac{\log\left(c(a+bx)^n\right)\log\left(-\frac{b\left(-\sqrt{e^2-4df}+e+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}}-\frac{\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(a + b*x)^n]/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*Log[-((b*(e - Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e
 - Sqrt[e^2 - 4*d*f]))))])/Sqrt[e^2 - 4*d*f] - (Log[c*(a + b*x)^n]*Log[-((b*
(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(2*a*f - b*(e + Sqrt[e^2 - 4*d*f]))))])/Sqr
t[e^2 - 4*d*f] + (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e - Sqrt[e^2 - 4
*d*f]))])/Sqrt[e^2 - 4*d*f] - (n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e +
 Sqrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(c(a+bx)^n)}{d+ex+fx^2}dx = \int \left(\frac{2f\log(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)} - \frac{2f\log(c(a+bx)^n)}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-4df}+2fx\right)}\right)dx$$

$$= \frac{(2f)\int \frac{\log(c(a+bx)^n)}{e-\sqrt{e^2-4df}+2fx}dx}{\sqrt{e^2-4df}} - \frac{(2f)\int \frac{\log(c(a+bx)^n)}{e+\sqrt{e^2-4df}+2fx}dx}{\sqrt{e^2-4df}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{(bn)\int \ldots}{\sqrt{\ldots}}$$

$$= \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{n\,\mathrm{Subst}\left(\int \ldots\right)}{\ldots}$$

$$= \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e-\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e-\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} - \frac{\log(c(a+bx)^n)\log\left(-\frac{b\left(e+\sqrt{e^2-4df}+2fx\right)}{2af-b\left(e+\sqrt{e^2-4df}\right)}\right)}{\sqrt{e^2-4df}} + \frac{n\mathrm{Li}_2\left(\frac{2\ldots}{2af-\ldots}\right)}{\sqrt{e^2\ldots}}$$

Mathematica [A] time = 0.181706, size = 194, normalized size = 0.8

$$\frac{n\mathrm{PolyLog}\left(2,\frac{2f(a+bx)}{2af+b\left(\sqrt{e^2-4df}-e\right)}\right) - n\mathrm{PolyLog}\left(2,\frac{2f(a+bx)}{2af-b\left(\sqrt{e^2-4df}+e\right)}\right) + \log(c(a+bx)^n)\left(\log\left(\frac{b\left(\sqrt{e^2-4df}-e-2fx\right)}{2af+b\sqrt{e^2-4df}+b(-e)}\right) - \log\left(\frac{b\left(\sqrt{e^2\ldots}\right)}{b\left(\sqrt{e^2\ldots}\right)}\right)\ldots\right)}{\sqrt{e^2-4df}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(a + b*x)^n]/(d + e*x + f*x^2),x]
```

```
[Out] (Log[c*(a + b*x)^n]*(Log[(b*(-e + Sqrt[e^2 - 4*d*f] - 2*f*x))/(-(b*e) + 2*a
*f + b*Sqrt[e^2 - 4*d*f])] - Log[(b*(e + Sqrt[e^2 - 4*d*f] + 2*f*x))/(-2*a*
f + b*(e + Sqrt[e^2 - 4*d*f]))]) + n*PolyLog[2, (2*f*(a + b*x))/(2*a*f + b*
(-e + Sqrt[e^2 - 4*d*f]))] - n*PolyLog[2, (2*f*(a + b*x))/(2*a*f - b*(e + S
qrt[e^2 - 4*d*f]))])/Sqrt[e^2 - 4*d*f]
```

Maple [C] time = 0.446, size = 689, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(b*x+a)^n)/(f*x^2+e*x+d),x)
```

```
[Out] 2*b*(ln((b*x+a)^n)-n*ln(b*x+a))/(4*b^2*d*f-b^2*e^2)^(1/2)*arctan((2*f*(b*x+
a)-2*a*f+b*e)/(4*b^2*d*f-b^2*e^2)^(1/2))-b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*ln(
```

```
b*x+a)*ln((2*f*(b*x+a)-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1/2))/(-2*a*f+b*e+(-
4*b^2*d*f+b^2*e^2)^(1/2)))+b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*ln(b*x+a)*ln((-2*
f*(b*x+a)+2*a*f-b*e+(-4*b^2*d*f+b^2*e^2)^(1/2))/(2*a*f-b*e+(-4*b^2*d*f+b^2*
e^2)^(1/2)))+b*n/(-4*b^2*d*f+b^2*e^2)^(1/2)*dilog((-2*f*(b*x+a)+2*a*f-b*e+(
-4*b^2*d*f+b^2*e^2)^(1/2))/(2*a*f-b*e+(-4*b^2*d*f+b^2*e^2)^(1/2)))-b*n/(-4*
b^2*d*f+b^2*e^2)^(1/2)*dilog((2*f*(b*x+a)-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1
/2))/(-2*a*f+b*e+(-4*b^2*d*f+b^2*e^2)^(1/2)))+I/(4*d*f-e^2)^(1/2)*arctan((2
*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*(b*x+a)^n)*csgn(I*c*(b*x+a)^n)^2-I/(4*
d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*f-e^2)^(1/2))*Pi*csgn(I*(b*x+a)^n)*csg
n(I*c*(b*x+a)^n)*csgn(I*c)-I/(4*d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*f-e^2)
^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^3+I/(4*d*f-e^2)^(1/2)*arctan((2*f*x+e)/(4*d*
f-e^2)^(1/2))*Pi*csgn(I*c*(b*x+a)^n)^2*csgn(I*c)+2/(4*d*f-e^2)^(1/2)*arctan
((2*f*x+e)/(4*d*f-e^2)^(1/2))*ln(c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left((bx+a)^n c\right)}{fx^2+ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="fricas")
```

```
[Out] integral(log((b*x + a)^n*c)/(f*x^2 + e*x + d), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(c\left(a+bx\right)^n\right)}{d+ex+fx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(b*x+a)**n)/(f*x**2+e*x+d),x)
```

```
[Out] Integral(log(c*(a + b*x)**n)/(d + e*x + f*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left((bx+a)^n c\right)}{fx^2+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(b*x+a)^n)/(f*x^2+e*x+d),x, algorithm="giac")
```

```
[Out] integrate(log((b*x + a)^n*c)/(f*x^2 + e*x + d), x)
```

3.350 $\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$

Optimal. Leaf size=103

$$\frac{2f\text{Unintegrable}\left(\frac{1}{\left(-\sqrt{e^2-4df}+e+2fx\right)\log(c(a+bx)^n)},x\right)}{\sqrt{e^2-4df}}-\frac{2f\text{Unintegrable}\left(\frac{1}{\left(\sqrt{e^2-4df}+e+2fx\right)\log(c(a+bx)^n)},x\right)}{\sqrt{e^2-4df}}$$

```
[Out] (2*f*Unintegrable[1/((e - Sqrt[e^2 - 4*d*f] + 2*f*x)*Log[c*(a + b*x)^n]), x
])/Sqrt[e^2 - 4*d*f] - (2*f*Unintegrable[1/((e + Sqrt[e^2 - 4*d*f] + 2*f*x)
*Log[c*(a + b*x)^n]), x])/Sqrt[e^2 - 4*d*f]
```

Rubi [A] time = 0.199032, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] (2*f*Defer[Int][1/((e - Sqrt[e^2 - 4*d*f] + 2*f*x)*Log[c*(a + b*x)^n]), x])
/Sqrt[e^2 - 4*d*f] - (2*f*Defer[Int][1/((e + Sqrt[e^2 - 4*d*f] + 2*f*x)*Log
[c*(a + b*x)^n]), x])/Sqrt[e^2 - 4*d*f]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx &= \int \left(\frac{2f}{\sqrt{e^2-4df}\left(e-\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)}-\frac{}{\sqrt{e^2-4df}\left(e+\sqrt{e^2-\right.}}\right.\\ &= \frac{(2f)\int \frac{1}{\left(e-\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)}\,dx}{\sqrt{e^2-4df}}-\frac{(2f)\int \frac{1}{\left(e+\sqrt{e^2-4df}+2fx\right)\log(c(a+bx)^n)}\,dx}{\sqrt{e^2-4df}}\end{aligned}$$

Mathematica [A] time = 0.565202, size = 0, normalized size = 0.

$$\int \frac{1}{(d+ex+fx^2)\log(c(a+bx)^n)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]),x]
```

```
[Out] Integrate[1/((d + e*x + f*x^2)*Log[c*(a + b*x)^n]), x]
```

Maple [A] time = 1.796, size = 0, normalized size = 0.

$$\int \frac{1}{(fx^2+ex+d)\ln\left(c(bx+a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(f*x^2+e*x+d)/ln(c*(b*x+a)^n),x)
```

```
[Out] int(1/(f*x^2+e*x+d)/ln(c*(b*x+a)^n),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(fx^2 + ex + d)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="maxima")
```

```
[Out] integrate(1/((f*x^2 + e*x + d)*log((b*x + a)^n*c)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(fx^2 + ex + d)\log\left((bx + a)^n c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="fricas")
```

```
[Out] integral(1/((f*x^2 + e*x + d)*log((b*x + a)^n*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x**2+e*x+d)/ln(c*(b*x+a)**n),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(fx^2 + ex + d)\log\left((bx + a)^n c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f*x^2+e*x+d)/log(c*(b*x+a)^n),x, algorithm="giac")
```

```
[Out] integrate(1/((f*x^2 + e*x + d)*log((b*x + a)^n*c)), x)
```

3.351 $\int \frac{x^3 \log(x)}{a+bx+cx^2} dx$

Optimal. Leaf size=286

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^3}+\frac{\log(x)\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right.}{}$$

```
[Out] (b*x)/c^2 - x^2/(4*c) - (b*x*Log[x])/c^2 + (x^2*Log[x])/(2*c) + ((b^2 - a*c
 - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^
2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*
Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c - (b
*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*
c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[
2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3)
```

Rubi [A] time = 0.443137, antiderivative size = 286, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2357, 2295, 2304, 2317, 2391}

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^3}+\frac{\log(x)\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (b*x)/c^2 - x^2/(4*c) - (b*x*Log[x])/c^2 + (x^2*Log[x])/(2*c) + ((b^2 - a*c
 - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^
2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*
Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3) + ((b^2 - a*c - (b
*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*
c])])/(2*c^3) + ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[
2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^3)
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
```

```
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x^3\log(x)}{a+bx+cx^2}\,dx = \int\left(-\frac{b\log(x)}{c^2}+\frac{x\log(x)}{c}+\frac{\left(ab+\left(b^2-ac\right)x\right)\log(x)}{c^2\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{\int \frac{\left(ab+\left(b^2-ac\right)x\right)\log(x)}{a+bx+cx^2}\,dx}{c^2} - \frac{b\int\log(x)\,dx}{c^2} + \frac{\int x\log(x)\,dx}{c}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\int\left(\frac{\left(b^2-ac+\frac{b\left(-b^2+3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(b^2-ac-\frac{b\left(-b^2+3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{c^2}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{c^2}+\frac{\left(b^2-ac+\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\int}{c^2}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(b^2-ac+\frac{b\left(b^2\right.}{\sqrt{b}}\right.}{}$$

$$= \frac{bx}{c^2}-\frac{x^2}{4c}-\frac{bx\log(x)}{c^2}+\frac{x^2\log(x)}{2c}+\frac{\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^3}+\frac{\left(b^2-ac+\frac{b\left(b^2\right.}{\sqrt{b}}\right.}{}$$

Mathematica [A] time = 0.650866, size = 464, normalized size = 1.62

$$\frac{2\left(b^2-ac\right)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\frac{4abc\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right)}{\sqrt{b^2-4ac}}+2\left(b^2-ac\right)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (4*b*c*x - c^2*x^2 - 4*b*c*x*Log[x] + 2*c^2*x^2*Log[x] + (4*a*b*c*Log[x]*Lo
g[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*
c] + 2*(b^2 - a*c)*(1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b - Sqrt[b^2 - 4*a
*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] - (4*a*b*c*Log[x]*Log[(b + Sqrt[b^2 -
 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c
)*(1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])] + (4*a*b*c*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])
])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c)*(1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (
2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] - (4*a*b*c*PolyLog[2, (-2*c*x)/(b + Sqrt[b
^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + 2*(b^2 - a*c)*(1 + b/Sqrt[b^2 - 4*a*c])*
PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(4*c^3)
```

Maple [B] time = 0.069, size = 791, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*x^2*ln(x)/c-1/4*x^2/c-b*x*ln(x)/c^2+b*x/c^2-1/2/c^2*ln(x)*ln((-2*c*x+(-
4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^3*ln(x)*ln((-2*c*x+(-4
*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+3/2/c^2*ln(x)/(-4*a*c+b^2)^
(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*b-1/2/c^3
*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)
^(1/2)))*b^3-1/2/c^2*ln(x)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^
(1/2)))*a+1/2/c^3*ln(x)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/
2)))*b^2-3/2/c^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(
b+(-4*a*c+b^2)^(1/2)))*a*b+1/2/c^3*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+(-4*a
*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^3-1/2/c^2*dilog((-2*c*x+(-4*a*c+
b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^3*dilog((-2*c*x+(-4*a*c+b^2)
^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+3/2/c^2/(-4*a*c+b^2)^(1/2)*dilog((-2
*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*a*b-1/2/c^3/(-4*a*c+b^2
)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^3-1/
2/c^2*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^3*
dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^2-3/2/c^2/(-4*
a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*a
*b+1/2/c^3/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c
+b^2)^(1/2)))*b^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^3\log(x)}{cx^2+bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x^3*log(x)/(c*x^2 + b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 \log(x)}{cx^2 + bx + a} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^3*log(x)/(c*x^2 + b*x + a), x)
```

3.352 $\int \frac{x^2 \log(x)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=234

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^2}-\frac{\log(x)\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4a}}\right.}{2c^2}$$

```
[Out] -(x/c) + (x*Log[x])/c - ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1
 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2
 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b -
 (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c
])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(
b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

Rubi [A] time = 0.355269, antiderivative size = 234, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2357, 2295, 2317, 2391}

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^2}-\frac{\log(x)\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4a}}\right.}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] -(x/c) + (x*Log[x])/c - ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1
 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2
 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - ((b -
 (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c
])])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(
b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2\log(x)}{a+bx+cx^2}\,dx &= \int\left(\frac{\log(x)}{c}-\frac{(a+bx)\log(x)}{c\left(a+bx+cx^2\right)}\right)dx\\
&= \frac{\int \log(x)\,dx}{c}-\frac{\int \frac{(a+bx)\log(x)}{a+bx+cx^2}\,dx}{c}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\int\left(\frac{\left(b+\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(b-\frac{-b^2+2ac}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{c}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{c}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{c}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{}\\
&= -\frac{x}{c}+\frac{x\log(x)}{c}-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{}
\end{aligned}$$

Mathematica [A] time = 0.255355, size = 434, normalized size = 1.85

$$-\frac{b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c^2}-\frac{b\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c^2}-\frac{a\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{a\text{Po}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] -(x/c) + (x*Log[x])/c - (a*Log[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b -
Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 - b/Sqrt[b^2 - 4*a*c])*L
og[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2)
 + (a*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/
(c*Sqrt[b^2 - 4*a*c]) - (b*(1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b
^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2) - (a*PolyLog[2, (-2*
c*x)/(b - Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 - b/Sqrt[b^2 -
 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*c^2) + (a*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]) - (b*(1 + b/Sq
rt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*c^2)
```

Maple [B] time = 0.063, size = 593, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] x*ln(x)/c-x/c-1/2/c^2*ln(x)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^
2)^(1/2)))*b-1/c*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/
(-b+(-4*a*c+b^2)^(1/2)))*a+1/2/c^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*
a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2-1/2/c^2*ln(x)*ln((2*c*x+(-4*
```

```
a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b+1/c*ln(x)/(-4*a*c+b^2)^(1/2)*ln
((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*a-1/2/c^2*ln(x)/(-4*a
*c+b^2)^(1/2)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^2-1
/2/c^2*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b-1/c/(
-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2
)))*a+1/2/c^2/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-
4*a*c+b^2)^(1/2)))*b^2-1/2/c^2*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*
c+b^2)^(1/2)))*b+1/c/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/
(b+(-4*a*c+b^2)^(1/2)))*a-1/2/c^2/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b
^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^2 \log(x)}{cx^2 + bx + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x^2*log(x)/(c*x^2 + b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 \log(x)}{cx^2 + bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^2*log(x)/(c*x^2 + b*x + a), x)
```

3.353 $\int \frac{x \log(x)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=193

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c}+\frac{\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+\right.}{2c}$$

```
[Out] ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])
/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*c) + ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[
b^2 - 4*a*c])])/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])])/(2*c)
```

Rubi [A] time = 0.180522, antiderivative size = 193, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2357, 2317, 2391}

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2c}+\frac{\log(x)\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+\right.}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])
/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*c) + ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b - Sqrt[
b^2 - 4*a*c])])/(2*c) + ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b +
 Sqrt[b^2 - 4*a*c])])/(2*c)
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{x\log(x)}{a+bx+cx^2}\,dx = \int\left(\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx$$

$$=\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx+\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\int\frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx$$

$$=\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c}-\frac{\left(1-\frac{b}{\sqrt{b^2-4a}}\right.}{}$$

$$=\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2c}+\frac{\left(1-\frac{b}{\sqrt{b^2-4a}}\right.}{}$$

Mathematica [A] time = 0.131616, size = 210, normalized size = 1.09

$$\frac{\left(\sqrt{b^2-4ac}-b\right)\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\left(\sqrt{b^2-4ac}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)+\log(x)\left(\left(\sqrt{b^2-4ac}-b\right)\log\left(-\right.\right.}{2c\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Log[x])/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*((-b + Sqrt[b^2 - 4*a*c])*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b -
Sqrt[b^2 - 4*a*c])] + (b + Sqrt[b^2 - 4*a*c])*Log[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) + (-b + Sqrt[b^2 - 4*a*c])*PolyLog[2, (2*c
*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b + Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)
/(b + Sqrt[b^2 - 4*a*c])])/(2*c*Sqrt[b^2 - 4*a*c])
```

Maple [B] time = 0.065, size = 361, normalized size = 1.9

$$\frac{\ln(x)}{2c}\left(\ln\left(\left(-2\,cx+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\sqrt{-4\,ac+b^2}-\ln\left(\left(-2\,cx+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*(-4*a*
c+b^2)^(1/2)-ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b+ln
((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*(-4*a*c+b^2)^(1/2)+ln
((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b)/c/(-4*a*c+b^2)^(1/
2)+1/2/c*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))+1/2/c/(
-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2))
)*b+1/2/c*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))-1/2/
c/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(
1/2)))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x\log(x)}{cx^2+bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(x*log(x)/(c*x^2 + b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\log(x)}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x*log(x)/(c*x^2 + b*x + a), x)
```

3.354 $\int \frac{\log(x)}{a+bx+cx^2} dx$

Optimal. Leaf size=153

$$\frac{\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{\sqrt{b^2-4ac}}+\frac{\log(x)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{\sqrt{b^2-4ac}}-\frac{\log(x)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{\sqrt{b^2-4ac}}$$

```
[Out] (Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] - (Log[
x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + PolyLog[2,
 (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c] - PolyLog[2, (-2*c*x)/
(b + Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c]
```

Rubi [A] time = 0.137424, antiderivative size = 153, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2357, 2317, 2391}

$$\frac{\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{\sqrt{b^2-4ac}}+\frac{\log(x)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)}{\sqrt{b^2-4ac}}-\frac{\log(x)\log\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] - (Log[
x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[b^2 - 4*a*c] + PolyLog[2,
 (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c] - PolyLog[2, (-2*c*x)/
(b + Sqrt[b^2 - 4*a*c])]/Sqrt[b^2 - 4*a*c]
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{a+bx+cx^2}\,dx = \int \left(\frac{2c\log(x)}{\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}+2cx\right)} - \frac{2c\log(x)}{\sqrt{b^2-4ac}\left(b+\sqrt{b^2-4ac}+2cx\right)} \right) dx$$

$$= \frac{(2c)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}} - \frac{(2c)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}}$$

$$= \frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\int \frac{\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{x}\,dx}{\sqrt{b^2-4ac}} + \frac{\int \frac{\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{x}\,dx}{\sqrt{b^2-4ac}}$$

$$= \frac{\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} + \frac{\text{Li}_2\left(-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}} - \frac{\text{Li}_2\left(-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.0562416, size = 144, normalized size = 0.94

$$\frac{\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right) - \text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right) + \log(x)\left(\log\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right) - \log\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\right)\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(a + b*x + c*x^2),x]
```

```
[Out] (Log[x]*(Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] - Log
[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) + PolyLog[2, (2*
c*x)/(-b + Sqrt[b^2 - 4*a*c])] - PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]
)])/Sqrt[b^2 - 4*a*c]
```

Maple [A] time = 0.066, size = 177, normalized size = 1.2

$$\ln(x)\left(\ln\left(\left(-2\,cx+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\,ac+b^2}\right)^{-1}\right) - \ln\left(\left(2\,cx+\sqrt{-4\,ac+b^2}+b\right)\left(b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\right)\frac{}{\sqrt{-4\,a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/(c*x^2+b*x+a),x)
```

```
[Out] ln(x)*(ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))-ln((2*c*x+
(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2))))/(-4*a*c+b^2)^(1/2)+1/(-4*a*c
+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))-1/
(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)
))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(x)}{cx^2 + bx + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^2 + b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(x)}{a + bx + cx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/(c*x**2+b*x+a),x)
```

```
[Out] Integral(log(x)/(a + b*x + c*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(x)}{cx^2 + bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/(c*x^2 + b*x + a), x)
```

3.355 $\int \frac{\log(x)}{x(a+bx+cx^2)}\,dx$

Optimal. Leaf size=204

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a}-\frac{\log(x)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+\right.}{2a}$$

```
[Out] Log[x]^2/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqr
t[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)
/(b + Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-
2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a)
```

Rubi [A] time = 0.282238, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2357, 2301, 2317, 2391}

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a}-\frac{\log(x)\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+\right.}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x*(a + b*x + c*x^2)),x]
```

```
[Out] Log[x]^2/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqr
t[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)
/(b + Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 + b/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-
2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*PolyLog
[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a)
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{\log(x)}{ax} + \frac{(-b-cx)\log(x)}{a\left(a+bx+cx^2\right)}\right) dx$$
$$= \frac{\int \frac{\log(x)}{x}\,dx}{a} + \frac{\int \frac{(-b-cx)\log(x)}{a+bx+cx^2}\,dx}{a}$$
$$= \frac{\log^2(x)}{2a} + \frac{\int \left(\frac{\left(-c-\frac{bc}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(-c+\frac{bc}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right) dx}{a}$$
$$= \frac{\log^2(x)}{2a} - \frac{\left(c\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{a} - \frac{\left(c\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{a}$$
$$= \frac{\log^2(x)}{2a} - \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a} - \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a}$$
$$= \frac{\log^2(x)}{2a} - \frac{\left(1+\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a} - \frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{2a}$$

Mathematica [A] time = 0.205468, size = 227, normalized size = 1.11

$$\frac{-\left(\sqrt{b^2-4ac}+b\right)\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\left(b-\sqrt{b^2-4ac}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)+\log(x)\left(\log(x)\sqrt{b^2-4ac}-(\cdots\right.}{2a\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x*(a + b*x + c*x^2)),x]
```

```
[Out] (Log[x]*(Sqrt[b^2 - 4*a*c]*Log[x] - (b + Sqrt[b^2 - 4*a*c])*Log[(b - Sqrt[b
^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*a*c])*Log
[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]) - (b + Sqrt[b^2
- 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a*Sqrt[b^2 - 4*a*c])
```

Maple [B] time = 0.068, size = 375, normalized size = 1.8

$$\frac{(\ln(x))^2}{2a} - \frac{\ln(x)}{2a}\ln\left(\left(-2cx+\sqrt{-4ac+b^2}-b\right)\left(-b+\sqrt{-4ac+b^2}\right)^{-1}\right) - \frac{\ln(x)b}{2a}\ln\left(\left(-2cx+\sqrt{-4ac+b^2}-b\right)\left(-b+\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*ln(x)^2/a-1/2/a*ln(x)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)
^(1/2)))-1/2/a*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-
b+(-4*a*c+b^2)^(1/2)))*b-1/2/a*ln(x)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4
*a*c+b^2)^(1/2)))+1/2/a*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+(-4*a*c+b^2)^(1/
2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b-1/2/a*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(
-b+(-4*a*c+b^2)^(1/2)))-1/2/a/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)
^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b-1/2/a*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+
b)/(b+(-4*a*c+b^2)^(1/2)))+1/2/a/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^
2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(x)}{cx^3 + bx^2 + ax}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^3 + b*x^2 + a*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(x)}{(cx^2 + bx + a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x), x)
```

3.356 $\int \frac{\log(x)}{x^2(a+bx+cx^2)}\,dx$

Optimal. Leaf size=251

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^2}+\frac{\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}\right.}{2a^2}$$

```
[Out] -(1/(a*x)) - Log[x]/(a*x) - (b*Log[x]^2)/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt
[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + (
(b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2
- 4*a*c])])/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2
*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

Rubi [A] time = 0.39122, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2357, 2304, 2301, 2317, 2391}

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^2}+\frac{\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{2cx}{b-\sqrt{b^2-4ac}}\right.}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] -(1/(a*x)) - Log[x]/(a*x) - (b*Log[x]^2)/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt
[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + (
(b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2
- 4*a*c])])/(2*a^2) + ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2
*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^2) + ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*
a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
```

```
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x^2\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{\log(x)}{ax^2}-\frac{b\log(x)}{a^2x}+\frac{\left(b^2-ac+bcx\right)\log(x)}{a^2\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{\int \frac{\left(b^2-ac+bcx\right)\log(x)}{a+bx+cx^2}\,dx}{a^2}+\frac{\int \frac{\log(x)}{x^2}\,dx}{a}-\frac{b\int \frac{\log(x)}{x}\,dx}{a^2}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\int \left(\frac{\left(bc+\frac{c\left(b^2-2ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(bc-\frac{c\left(b^2-2ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)}{b+\sqrt{b^2-4ac}+2cx}\right)dx}{a^2}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(c\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{a^2}+\frac{\left(c\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(}{b-\sqrt{b^2-4}}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log}{2a^2}$$

$$= -\frac{1}{ax}-\frac{\log(x)}{ax}-\frac{b\log^2(x)}{2a^2}+\frac{\left(b+\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)\log(x)\log}{2a^2}$$

Mathematica [A] time = 0.364578, size = 255, normalized size = 1.02

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+\left(\frac{2ac-b^2}{\sqrt{b^2-4ac}}+b\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)+\log(x)\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)\log\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right.}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a)/x - (2*a*Log[x])/x - b*Log[x]^2 + (b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a
*c])*Log[x]*Log[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] +
(b + (-b^2 + 2*a*c)/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/(b + Sqrt[b^2 - 4*a*c])] + (b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*Pol
yLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (b + (-b^2 + 2*a*c)/Sqrt[b^2 -
4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a^2)
```

Maple [B] time = 0.069, size = 608, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x^2/(c*x^2+b*x+a),x)
```

```
[Out] -1/2*b*ln(x)^2/a^2-ln(x)/a/x-1/a/x+1/2/a^2*ln(x)*ln((-2*c*x+(-4*a*c+b^2)^(1
/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b-1/a*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(
-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*c+1/2/a^2*ln(x)/(-4*a*c+b^2)^
(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+1/2/a^2
*ln(x)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b+1/a*ln(x)/
(-4*a*c+b^2)^(1/2)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*
c-1/2/a^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a
*c+b^2)^(1/2)))*b^2+1/2/a^2*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c
+b^2)^(1/2)))*b-1/a/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/
(-b+(-4*a*c+b^2)^(1/2)))*c+1/2/a^2/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c
+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+1/2/a^2*dilog((2*c*x+(-4*a*c+b^
2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b+1/a/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(
-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^2/(-4*a*c+b^2)^(1/2)*d
ilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left(x\right)}{cx^4 + bx^3 + ax^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^4 + b*x^3 + a*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log\left(x\right)}{\left(cx^2 + bx + a\right)x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x^2), x)
```

3.357 $\int \frac{\log(x)}{x^3(a+bx+cx^2)}\,dx$

Optimal. Leaf size=308

$$-\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^3}-\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^3}+\frac{\log^2(x)\left(b^2-ac\right)}{2a^3}$$

```
[Out] -1/(4*a*x^2) + b/(a^2*x) - Log[x]/(2*a*x^2) + (b*Log[x])/(a^2*x) + ((b^2 -
a*c)*Log[x]^2)/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])
*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (
b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Poly
Log[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (b*(b^2 -
 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(
2*a^3)
```

Rubi [A] time = 0.512413, antiderivative size = 308, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {2357, 2304, 2301, 2317, 2391}

$$-\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{2a^3}-\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)}{2a^3}+\frac{\log^2(x)\left(b^2-ac\right)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Int[Log[x]/(x^3*(a + b*x + c*x^2)),x]
```


```
[Out] -1/(4*a*x^2) + b/(a^2*x) - Log[x]/(2*a*x^2) + (b*Log[x])/(a^2*x) + ((b^2 -
a*c)*Log[x]^2)/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])
*Log[x]*Log[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (
b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c])])/(2*a^3) - ((b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Poly
Log[2, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(2*a^3) - ((b^2 - a*c - (b*(b^2 -
 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(
2*a^3)
```


Rule 2357

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{
u = ExpandIntegrand[(a + b*Log[c*x^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /
; FreeQ[{a, b, c, n}, x] && RationalFunctionQ[RFx, x] && IGtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log(x)}{x^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{\log(x)}{ax^3} - \frac{b\log(x)}{a^2x^2} + \frac{\left(b^2-ac\right)\log(x)}{a^3x} + \frac{\left(-b\left(b^2-2ac\right)-c\left(b^2-ac\right)x\right)\log(x)}{a^3\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{\int \frac{\left(-b\left(b^2-2ac\right)-c\left(b^2-ac\right)x\right)\log(x)}{a+bx+cx^2}\,dx}{a^3} + \frac{\int \frac{\log(x)}{x^3}\,dx}{a} - \frac{b\int \frac{\log(x)}{x^2}\,dx}{a^2} + \frac{\left(b^2-ac\right)\int \frac{\log(x)}{x}\,dx}{a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} + \frac{\int \left(\frac{\left(-\frac{bc\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}-c\left(b^2-ac\right)\right)\log(x)}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(\frac{bc\left(b^2-3ac\right)}{\sqrt{b^2-4ac}} \ldots\right.}{b+\sqrt{\ldots}}\right.}{a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} - \frac{\left(c\left(b^2-ac-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\right)\int \frac{\log(x)}{b+\sqrt{b^2-4ac}+2c\ldots}}{a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} - \frac{\left(b^2-ac+\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{\ldots}{b-\ldots}\right.}{2a^3}$$

$$= -\frac{1}{4ax^2} + \frac{b}{a^2x} - \frac{\log(x)}{2ax^2} + \frac{b\log(x)}{a^2x} + \frac{\left(b^2-ac\right)\log^2(x)}{2a^3} - \frac{\left(b^2-ac+\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}\right)\log(x)\log\left(1+\frac{\ldots}{b-\ldots}\right.}{2a^3}$$

Mathematica [A] time = 0.449763, size = 311, normalized size = 1.01

$$-\frac{2\left(\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+2\left(-\frac{b\left(b^2-3ac\right)}{\sqrt{b^2-4ac}}-ac+b^2\right)\text{PolyLog}\left(2,-\frac{2cx}{\sqrt{b^2-4ac}+b}\right)+\frac{a^2}{x^2}+\frac{2a^2\log(x)}{x^2}-2\,\text{lo}\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[x]/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -(a^2/x^2 - (4*a*b)/x + (2*a^2*Log[x])/x^2 - (4*a*b*Log[x])/x - 2*(b^2 - a*
c)*Log[x]^2 + 2*(b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Lo
g[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c -
 (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*Log[x]*Log[(b + Sqrt[b^2 - 4*a*c] + 2
*c*x)/(b + Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c + (b*(b^2 - 3*a*c))/Sqrt[b^2
- 4*a*c])*PolyLog[2, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + 2*(b^2 - a*c - (b*
(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*PolyLog[2, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c
])])/(4*a^3)
```

Maple [B] time = 0.067, size = 816, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x^3/(c*x^2+b*x+a),x)
```

```
[Out] -1/2/a^2*ln(x)^2*c+1/2/a^3*ln(x)^2*b^2+b*ln(x)/x/a^2+b/x/a^2+1/2/a^2*ln(x)*
ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^3*ln(x)*l
n((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+3/2/a^2*ln(x)/
(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2))
)*b*c-1/2/a^3*ln(x)/(-4*a*c+b^2)^(1/2)*ln((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b
+(-4*a*c+b^2)^(1/2)))*b^3+1/2/a^2*ln(x)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+
(-4*a*c+b^2)^(1/2)))*c-1/2/a^3*ln(x)*ln((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4
*a*c+b^2)^(1/2)))*b^2-3/2/a^2*ln(x)/(-4*a*c+b^2)^(1/2)*ln((2*c*x+(-4*a*c+b^
2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b*c+1/2/a^3*ln(x)/(-4*a*c+b^2)^(1/2)*ln
((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^3+1/2/a^2*dilog((-2
*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*c-1/2/a^3*dilog((-2*c*x
+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b^2+3/2/a^2/(-4*a*c+b^2)^(1
/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b*c-1/2/a^
3/(-4*a*c+b^2)^(1/2)*dilog((-2*c*x+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(
1/2)))*b^3+1/2/a^2*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)
))*c-1/2/a^3*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b^2
-3/2/a^2/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b
^2)^(1/2)))*b*c+1/2/a^3/(-4*a*c+b^2)^(1/2)*dilog((2*c*x+(-4*a*c+b^2)^(1/2)+
b)/(b+(-4*a*c+b^2)^(1/2)))*b^3-1/2*ln(x)/a/x^2-1/4/a/x^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(x)}{cx^5 + bx^4 + ax^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral(log(x)/(c*x^5 + b*x^4 + a*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)/x**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(x)}{(cx^2 + bx + a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)/x^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate(log(x)/((c*x^2 + b*x + a)*x^3), x)
```

3.358 $\int x^3 \log\left(fx^m\right)(a+b\log(c(d+ex)^n))\,dx$

Optimal. Leaf size=232

$$-\frac{bd^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{4e^4}-\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n))-\frac{bd^4n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{4e^4}+\frac{bd^3nx}{}$$

```
[Out] (-5*b*d^3*m*n*x)/(16*e^3) + (3*b*d^2*m*n*x^2)/(32*e^2) - (7*b*d*m*n*x^3)/(1
44*e) + (b*m*n*x^4)/32 + (b*d^3*n*x*Log[f*x^m])/(4*e^3) - (b*d^2*n*x^2*Log[
f*x^m])/(8*e^2) + (b*d*n*x^3*Log[f*x^m])/(12*e) - (b*n*x^4*Log[f*x^m])/16 +
 (b*d^4*m*n*Log[d + e*x])/(16*e^4) - ((m*x^4 - 4*x^4*Log[f*x^m])*(a + b*Log
[c*(d + e*x)^n]))/16 - (b*d^4*n*Log[f*x^m]*Log[1 + (e*x)/d])/(4*e^4) - (b*d
^4*m*n*PolyLog[2, -((e*x)/d)])/(4*e^4)
```

Rubi [A] time = 0.220241, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 43, 2351, 2295, 2304, 2317, 2391}

$$-\frac{bd^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{4e^4}-\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n))-\frac{bd^4n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{4e^4}+\frac{bd^3nx}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```


```
[Out] (-5*b*d^3*m*n*x)/(16*e^3) + (3*b*d^2*m*n*x^2)/(32*e^2) - (7*b*d*m*n*x^3)/(1
44*e) + (b*m*n*x^4)/32 + (b*d^3*n*x*Log[f*x^m])/(4*e^3) - (b*d^2*n*x^2*Log[
f*x^m])/(8*e^2) + (b*d*n*x^3*Log[f*x^m])/(12*e) - (b*n*x^4*Log[f*x^m])/16 +
 (b*d^4*m*n*Log[d + e*x])/(16*e^4) - ((m*x^4 - 4*x^4*Log[f*x^m])*(a + b*Log
[c*(d + e*x)^n]))/16 - (b*d^4*n*Log[f*x^m]*Log[1 + (e*x)/d])/(4*e^4) - (b*d
^4*m*n*PolyLog[2, -((e*x)/d)])/(4*e^4)
```


Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int x^3 \log\left(fx^m\right)(a+b\log(c(d+ex)^n))\,dx = -\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - \frac{1}{4}(ben)\int \frac{x^4\log\left(fx^m\right.}{d+ex}$$

$$= -\frac{1}{16}\left(mx^4-4x^4\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - \frac{1}{4}(ben)\int\left(-\frac{d^3\log\left(fx\right.}{e^4}\right.$$

$$= -\frac{bd^3mnx}{16e^3}+\frac{bd^2mnx^2}{32e^2}-\frac{bdmnx^3}{48e}+\frac{1}{64}bmnx^4+\frac{bd^4mn\log(d+ex)}{16e^4}-\frac{1}{16}(n$$

$$= -\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log\left(fx^m\right)}{4e^3}-\frac{bd^2}{}$$

$$= -\frac{5bd^3mnx}{16e^3}+\frac{3bd^2mnx^2}{32e^2}-\frac{7bdmnx^3}{144e}+\frac{1}{32}bmnx^4+\frac{bd^3nx\log\left(fx^m\right)}{4e^3}-\frac{bd^2}{}$$

Mathematica [A] time = 0.190901, size = 221, normalized size = 0.95

$$\frac{-72bd^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)-6\log\left(fx^m\right)\left(-12ae^4x^4-12be^4x^4\log\left(c(d+ex)^n\right)+benx\left(6d^2ex-12d^3-4de^2x^2+3e^3x^3\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-6*Log[f*x^m]*(-12*a*e^4*x^4 + b*e*n*x*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
+ 3*e^3*x^3) + 12*b*d^4*n*Log[d + e*x] - 12*b*e^4*x^4*Log[c*(d + e*x)^n]) +
 m*(-90*b*d^3*e*n*x + 27*b*d^2*e^2*n*x^2 - 14*b*d*e^3*n*x^3 - 18*a*e^4*x^4
+ 9*b*e^4*n*x^4 + 18*b*d^4*n*(1 + 4*Log[x])*Log[d + e*x] - 18*b*e^4*x^4*Log
[c*(d + e*x)^n] - 72*b*d^4*n*Log[x]*Log[1 + (e*x)/d]) - 72*b*d^4*m*n*PolyLo
g[2, -((e*x)/d)])/(288*e^4)
```

Maple [C] time = 1.115, size = 2330, normalized size = 10.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] -1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*c
)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*
x^m)+(1/4*b*x^4*ln(x^m)+1/16*b*x^4*(-2*I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*
x^m)+2*I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+2*I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-2*
I*Pi*csgn(I*f*x^m)^3+4*ln(f)-m))*ln((e*x+d)^n)-205/576*b*d^4*m*n/e^4-1/8*I*
x^4*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/8*I*x^4*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2-1/1
6*x^4*a*m+1/4*m/e^4*b*d^4*n*dilog(-e*x/d)-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3
*x^4*csgn(I*f*x^m)^3-1/8*I*x^4*Pi*a*csgn(I*f*x^m)^3-1/8*I*x^4*Pi*a*csgn(I*f
)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I*x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)
^n)^2+1/8*I*x^4*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*x^4*
ln(f)*a-5/16*b*d^3*m*n*x/e^3+3/32*b*d^2*m*n*x^2/e^2+1/4*a*x^4*ln(x^m)-1/32*
I*m*Pi*b*x^4*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/32*I*m*Pi*b*x^4*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I*x^4*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^
2-1/16*x^4*ln(c)*b*m-1/16*x^4*ln(f)*b*n+1/4*x^4*ln(f)*ln(c)*b-1/16*n*b*ln(x
^m)*x^4+1/4*b*ln(c)*x^4*ln(x^m)-1/8*I*x^4*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*
csgn(I*f*x^m)-1/8*I*x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)+1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/8*I/e^3*Pi*b*d^3*n
*csgn(I*f*x^m)^3*x+1/32*b*m*n*x^4+1/4*m/e^4*b*d^4*n*ln(e*x+d)*ln(-e*x/d)+1/
4/e^3*ln(f)*b*d^3*n*x-1/8/e^2*ln(f)*x^2*b*d^2*n+1/12/e*ln(f)*x^3*b*d*n-1/4/
e^4*b*d^4*n*ln(e*x+d)*ln(f)+1/8*I/e^3*Pi*b*d^3*n*csgn(I*f)*csgn(I*f*x^m)^2*
x+1/24*I/e*Pi*x^3*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2+1/24*I/e*Pi*x^3*b*d*n*csg
n(I*x^m)*csgn(I*f*x^m)^2-1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*f)*csgn(I*f*x^m)^
2+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f*x^m)^3+1/16*b*Pi
^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f*x^m)^3+1/16*b*Pi^2*
csgn(I*c*(e*x+d)^n)^3*x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c*(e
*x+d)^n)^3*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3
*x^4*ln(x^m)-1/8*I*x^4*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/8*I*x^4*Pi*a*csgn
(I*x^m)*csgn(I*f*x^m)^2+1/32*I*m*Pi*b*x^4*csgn(I*c*(e*x+d)^n)^3+1/32*I*x^4*
Pi*b*n*csgn(I*f*x^m)^3-1/24*I/e*Pi*x^3*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f
*x^m)-1/8*I/e^3*Pi*b*d^3*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x-1/4/e^4*n*
b*ln(x^m)*d^4*ln(e*x+d)+1/12/e*n*b*ln(x^m)*d*x^3-1/8/e^2*n*b*ln(x^m)*x^2*d^
2+1/4/e^3*n*b*ln(x^m)*x*d^3+1/16*I/e^2*Pi*x^2*b*d^2*n*csgn(I*f)*csgn(I*x^m)
*csgn(I*f*x^m)+1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*
f*x^m)+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*x^m
)*csgn(I*f*x^m)+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*csg
n(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/32*I*m*Pi*b*x^4*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)+1/32*I*x^4*Pi*b*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^
m)+1/8*I*x^4*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2-1/32*I*x^4*Pi*b*n*csgn(I*
f)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)*x^4*csgn(I*f)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2*x^4*ln(x^m)+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2*x^4*ln(x^m)-1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)*x^4*ln(x^m)-1/24*I/e*Pi*x^3*b*d*n*csgn(I*f*x^m)^3+1/16*I/e^2*Pi*x^2*b*d^
2*n*csgn(I*f*x^m)^3-7/144*b*d*m*n*x^3/e-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*
c*(e*x+d)^n)^3*x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/16*b*Pi^2*csgn(I*c
)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*csgn(I*f*x^m)^3-1/16*b*Pi^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/32*I*x^4*Pi*b*
n*csgn(I*x^m)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x
```

```
^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I/e^3*Pi*b*d^3*n*csgn(I*x^m)*csgn(I*f*x^
m)^2*x-1/8*I/e^4*b*d^4*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/e^4*b
*d^4*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16*b*d^4*m*n*ln(e*x+d)/e^
4
```

Maxima [A] time = 1.26021, size = 312, normalized size = 1.34

$$\frac{1}{288}\left(\frac{72\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bd^4n}{e^4}-\frac{18\,be^4x^4\log\left(\left(ex+d\right)^n\right)+14\,bde^3nx^3-27\,bd^2e^2nx^2+90\,bd^3e}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/288*(72*(log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d^4*n
/e^4 - (18*b*e^4*x^4*log((e*x + d)^n) + 14*b*d*e^3*n*x^3 - 27*b*d^2*e^2*n*x
^2 + 90*b*d^3*e*n*x - 18*b*d^4*n*log(e*x + d) + 9*(2*a*e^4 - (e^4*n - 2*e^4
*log(c))*b)*x^4)/e^4)*m + 1/48*(12*b*x^4*log((e*x + d)^n*c) + 12*a*x^4 - b*
e*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d^2*e*x^2 - 12*
d^3*x)/e^4))*log(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(bx^3\log\left(\left(ex+d\right)^nc\right)\log\left(fx^m\right)+ax^3\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*x^3*log((e*x + d)^n*c)*log(f*x^m) + a*x^3*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\log\left(\left(ex+d\right)^nc\right)+a\right)x^3\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^3*log(f*x^m), x)
```

3.359 $\int x^2 \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=195

$$\frac{bd^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{3e^3}-\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bd^3n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{3e^3}-\frac{bd^2nx\,\text{lo}}{3e}$$

```
[Out] (4*b*d^2*m*n*x)/(9*e^2) - (5*b*d*m*n*x^2)/(36*e) + (2*b*m*n*x^3)/27 - (b*d^
2*n*x*Log[f*x^m])/(3*e^2) + (b*d*n*x^2*Log[f*x^m])/(6*e) - (b*n*x^3*Log[f*x
^m])/9 - (b*d^3*m*n*Log[d + e*x])/(9*e^3) - ((m*x^3 - 3*x^3*Log[f*x^m])*(a
+ b*Log[c*(d + e*x)^n]))/9 + (b*d^3*n*Log[f*x^m]*Log[1 + (e*x)/d])/(3*e^3)
+ (b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(3*e^3)
```

Rubi [A] time = 0.183098, antiderivative size = 195, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 43, 2351, 2295, 2304, 2317, 2391}

$$\frac{bd^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{3e^3}-\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bd^3n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{3e^3}-\frac{bd^2nx\,\text{lo}}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (4*b*d^2*m*n*x)/(9*e^2) - (5*b*d*m*n*x^2)/(36*e) + (2*b*m*n*x^3)/27 - (b*d^
2*n*x*Log[f*x^m])/(3*e^2) + (b*d*n*x^2*Log[f*x^m])/(6*e) - (b*n*x^3*Log[f*x
^m])/9 - (b*d^3*m*n*Log[d + e*x])/(9*e^3) - ((m*x^3 - 3*x^3*Log[f*x^m])*(a
+ b*Log[c*(d + e*x)^n]))/9 + (b*d^3*n*Log[f*x^m]*Log[1 + (e*x)/d])/(3*e^3)
+ (b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(3*e^3)
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int x^2 \log\left(fx^m\right)(a+b\log(c(d+ex)^n))\,dx = -\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - \frac{1}{3}(ben)\int \frac{x^3\log\left(fx^m\right)}{d+ex}$$

$$= -\frac{1}{9}\left(mx^3-3x^3\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - \frac{1}{3}(ben)\int\left(\frac{d^2\log\left(fx^m\right)}{e^3}\right.$$

$$= \frac{bd^2mnx}{9e^2} - \frac{bdmnx^2}{18e} + \frac{1}{27}bmnx^3 - \frac{bd^3mn\log(d+ex)}{9e^3} - \frac{1}{9}\left(mx^3-3x^3\log\left(f\right.\right.$$

$$= \frac{4bd^2mnx}{9e^2} - \frac{5bdmnx^2}{36e} + \frac{2}{27}bmnx^3 - \frac{bd^2nx\log\left(fx^m\right)}{3e^2} + \frac{bdnx^2\log\left(fx^m\right)}{6e} -$$

$$= \frac{4bd^2mnx}{9e^2} - \frac{5bdmnx^2}{36e} + \frac{2}{27}bmnx^3 - \frac{bd^2nx\log\left(fx^m\right)}{3e^2} + \frac{bdnx^2\log\left(fx^m\right)}{6e} -$$

Mathematica [A] time = 0.187795, size = 197, normalized size = 1.01

$$\frac{36bd^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)+6\log\left(fx^m\right)\left(6ae^3x^3+6be^3x^3\log\left(c(d+ex)^n\right)+benx\left(-6d^2+3dex-2e^2x^2\right)+6bd^3n\log(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (6*Log[f*x^m]*(6*a*e^3*x^3 + b*e*n*x*(-6*d^2 + 3*d*e*x - 2*e^2*x^2) + 6*b*d
^3*n*Log[d + e*x] + 6*b*e^3*x^3*Log[c*(d + e*x)^n]) + m*(48*b*d^2*e*n*x - 1
5*b*d*e^2*n*x^2 - 12*a*e^3*x^3 + 8*b*e^3*n*x^3 - 12*b*d^3*n*(1 + 3*Log[x])*
Log[d + e*x] - 12*b*e^3*x^3*Log[c*(d + e*x)^n] + 36*b*d^3*n*Log[x]*Log[1 +
(e*x)/d]) + 36*b*d^3*m*n*PolyLog[2, -((e*x)/d)])/(108*e^3)
```

Maple [C] time = 1.02, size = 2162, normalized size = 11.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/12*b*Pi
^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f*x^m)^3+1/6*I*x^3*Pi*a*csgn(
I*x^m)*csgn(I*f*x^m)^2-1/6*I*x^3*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+(1/3*b*x^
3*ln(x^m)+1/18*b*x^3*(-3*I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+3*I*Pi*cs
gn(I*f)*csgn(I*f*x^m)^2+3*I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-3*I*Pi*csgn(I*f*
x^m)^3+6*ln(f)-2*m))*ln((e*x+d)^n)-1/9*n*b*ln(x^m)*x^3+1/3*b*ln(c)*x^3*ln(x
^m)+1/3*x^3*ln(f)*ln(c)*b-1/9*x^3*ln(f)*b*n-1/9*x^3*ln(c)*b*m-1/12*b*Pi^2*c
sgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f*x^m)^3-1/6*I*x^3*Pi*a*csgn(I*f*x^m)^3+49/
108*b*d^3*m*n/e^3-1/6*I*x^3*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/18*I*x^3*Pi*b*n*cs
gn(I*f*x^m)^3+1/18*I*m*Pi*b*x^3*csgn(I*c*(e*x+d)^n)^3-1/9*x^3*a*m+1/3*x^3*l
n(f)*a+1/3/e^3*n*b*ln(x^m)*d^3*ln(e*x+d)+1/6/e*n*b*ln(x^m)*x^2*d-1/3/e^2*n*
b*ln(x^m)*x*d^2+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csg
n(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f)*csgn(I*f*x^m)^
2-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)
-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*csgn(I*f*x
^m)^3-1/6*I*x^3*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/e^2*Pi
*b*d^2*n*csgn(I*x^m)*csgn(I*f*x^m)^2*x+1/3*a*x^3*ln(x^m)+2/27*b*m*n*x^3-1/6
*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*ln(x^m)-1/12*I/
e*Pi*x^2*b*d*n*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)*x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I*x^3*Pi
*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2*x^3*ln(x^m)-1/18*I*x^3*Pi*b*n*csgn(I*f)*csgn(I*f*x^m)^2-1/3*m/
e^3*b*d^3*n*ln(e*x+d)*ln(-e*x/d)-1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*f)*c
sgn(I*x^m)*csgn(I*f*x^m)+1/6*I*x^3*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^2+1/6*I*x^3*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2+1/18*I*m*Pi*b*x^3
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I/e^3*b*d^3*n*ln(e*x+d
)*Pi*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I
*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2*x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I*b*Pi*csgn(I*c*(e*x+d)^
n)^3*x^3*ln(x^m)+1/6*I*x^3*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2+1/6*I/e^2*Pi*b*d^
2*n*csgn(I*f*x^m)^3*x-1/18*I*x^3*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I*b
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*ln(x^m)-1/12*b*Pi^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/18*I*m*Pi*b*x^3*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/18*I*m*Pi*b*x^3*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2-1/6*I/e^2*Pi*b*d^2*n*csgn(I*f)*csgn(I*f*x^m)^2*x-1/3*m/e^3*b
*d^3*n*dilog(-e*x/d)+1/12*I/e*Pi*x^2*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2+1/12*I
/e*Pi*x^2*b*d*n*csgn(I*x^m)*csgn(I*f*x^m)^2+1/18*I*x^3*Pi*b*n*csgn(I*f)*csg
n(I*x^m)*csgn(I*f*x^m)-1/6*I*x^3*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)+1/3/e^3*b*d^3*n*ln(e*x+d)*ln(f)-1/3/e^2*ln(f)*b*d^2*n*x+1/
6/e*ln(f)*x^2*b*d*n+1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^
2+1/6*I/e^3*b*d^3*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/12*b*Pi^2*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/12*b*Pi^2*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*csgn(I*f)*csgn(I*f*x^m)^2+4/9*b*d
^2*m*n*x/e^2-5/36*b*d*m*n*x^2/e-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)*x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I/e^2*Pi*b*d^2
*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x-1/12*I/e*Pi*x^2*b*d*n*csgn(I*f)*cs
gn(I*x^m)*csgn(I*f*x^m)-1/6*I*x^3*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+
1/6*I*x^3*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/9*b*d^3*m*n*ln(e*x+d
)/e^3
```

Maxima [A] time = 1.20714, size = 279, normalized size = 1.43

$$-\frac{1}{108}\left(\frac{36\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bd^3n}{e^3}+\frac{12\,be^3x^3\log\left(\left(ex+d\right)^n\right)+15\,bde^2nx^2-48\,bd^2enx+12\,bd^3n}{e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -1/108*(36*(log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d^3*
n/e^3 + (12*b*e^3*x^3*log((e*x + d)^n) + 15*b*d*e^2*n*x^2 - 48*b*d^2*e*n*x
+ 12*b*d^3*n*log(e*x + d) + 4*(3*a*e^3 - (2*e^3*n - 3*e^3*log(c))*b)*x^3)/e
^3)*m + 1/18*(6*b*x^3*log((e*x + d)^n*c) + 6*a*x^3 + b*e*n*(6*d^3*log(e*x +
 d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3))*log(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(bx^2\log\left(\left(ex+d\right)^nc\right)\log\left(fx^m\right)+ax^2\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*x^2*log((e*x + d)^n*c)*log(f*x^m) + a*x^2*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\log\left(\left(ex+d\right)^nc\right)+a\right)x^2\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x^2*log(f*x^m), x)
```

3.360 $\int x \log\left(f x^m\right)(a + b\log(c(d + ex)^n))\,dx$

Optimal. Leaf size=158

$$-\frac{bd^2mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{2e^2}-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n))-\frac{bd^2n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{2e^2}+\frac{bd^2mn}{}$$

```
[Out] (-3*b*d*m*n*x)/(4*e) + (b*m*n*x^2)/4 + (b*d*n*x*Log[f*x^m])/(2*e) - (b*n*x^
2*Log[f*x^m])/4 + (b*d^2*m*n*Log[d + e*x])/(4*e^2) - ((m*x^2 - 2*x^2*Log[f*
x^m])*(a + b*Log[c*(d + e*x)^n]))/4 - (b*d^2*n*Log[f*x^m]*Log[1 + (e*x)/d])
/(2*e^2) - (b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(2*e^2)
```

Rubi [A] time = 0.13785, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {2426, 43, 2351, 2295, 2304, 2317, 2391}

$$-\frac{bd^2mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{2e^2}-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n))-\frac{bd^2n\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{2e^2}+\frac{bd^2mn}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```



```
[Out] (-3*b*d*m*n*x)/(4*e) + (b*m*n*x^2)/4 + (b*d*n*x*Log[f*x^m])/(2*e) - (b*n*x^
2*Log[f*x^m])/4 + (b*d^2*m*n*Log[d + e*x])/(4*e^2) - ((m*x^2 - 2*x^2*Log[f*
x^m])*(a + b*Log[c*(d + e*x)^n]))/4 - (b*d^2*n*Log[f*x^m]*Log[1 + (e*x)/d])
/(2*e^2) - (b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(2*e^2)
```


Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int x\log\left(fx^m\right)(a+b\log(c(d+ex)^n))\,dx = -\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n))-\frac{1}{2}(ben)\int\frac{x^2\log\left(fx^m\right)}{d+ex}\,d$$

$$= -\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n))-\frac{1}{2}(ben)\int\left(-\frac{d\log\left(fx^m\right)}{e^2}\right.$$

$$= -\frac{bdmnx}{4e}+\frac{1}{8}bmnx^2+\frac{bd^2mn\log(d+ex)}{4e^2}-\frac{1}{4}\left(mx^2-2x^2\log\left(fx^m\right)\right)(a+b\,\mathrm{l}$$

$$= -\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log\left(fx^m\right)}{2e}-\frac{1}{4}bnx^2\log\left(fx^m\right)+\frac{bd^2mn\log(d+}{4e^2}$$

$$= -\frac{3bdmnx}{4e}+\frac{1}{4}bmnx^2+\frac{bdnx\log\left(fx^m\right)}{2e}-\frac{1}{4}bnx^2\log\left(fx^m\right)+\frac{bd^2mn\log(d+}{4e^2}$$

Mathematica [A] time = 0.128911, size = 164, normalized size = 1.04

$$\frac{-2bd^2mn\mathrm{PolyLog}\left(2,-\frac{ex}{d}\right)+m\left(-ae^2x^2-be^2x^2\log\left(c(d+ex)^n\right)+bd^2n(2\log(x)+1)\log(d+ex)-2bd^2n\log(x)\log\left(\frac{ex}{d}\right.\right.}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (Log[f*x^m]*(-2*b*d^2*n*Log[d + e*x] + e*x*(2*b*d*n + 2*a*e*x - b*e*n*x + 2
*b*e*x*Log[c*(d + e*x)^n])) + m*(-3*b*d*e*n*x - a*e^2*x^2 + b*e^2*n*x^2 + b
*d^2*n*(1 + 2*Log[x])*Log[d + e*x] - b*e^2*x^2*Log[c*(d + e*x)^n] - 2*b*d^2
*n*Log[x]*Log[1 + (e*x)/d]) - 2*b*d^2*m*n*PolyLog[2, -((e*x)/d)])/(4*e^2)
```

Maple [C] time = 1.031, size = 1994, normalized size = 12.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] -1/8*I*x^2*Pi*b*n*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I*x^2*Pi*a*csgn(I*f)*csgn
(I*x^m)*csgn(I*f*x^m)+1/4*I*x^2*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-
1/4*x^2*ln(c)*b*m+(1/2*b*x^2*ln(x^m)+1/4*b*x^2*(-I*Pi*csgn(I*f)*csgn(I*x^m)
*csgn(I*f*x^m)+I*Pi*csgn(I*f)*csgn(I*f*x^m)^2+I*Pi*csgn(I*x^m)*csgn(I*f*x^m
)^2-I*Pi*csgn(I*f*x^m)^3+2*ln(f)-m))*ln((e*x+d)^n)+1/4*I*x^2*Pi*a*csgn(I*x^
m)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*c
sgn(I*f*x^m)^3+1/2/e*n*b*ln(x^m)*d*x-1/2/e^2*n*b*ln(x^m)*d^2*ln(e*x+d)-1/4*
n*b*ln(x^m)*x^2+1/2*x^2*ln(f)*ln(c)*b-1/4*x^2*ln(f)*b*n+1/4*I/e^2*b*d^2*n*l
n(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I*x^2*Pi*a*csgn(I*f*x^m
)^3-1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*csgn(I*f*x^m)^3-1/4*x^2*a*m+1/2*x^
2*ln(f)*a-5/8*b*d^2*m*n/e^2+1/2*a*x^2*ln(x^m)+1/2*b*ln(c)*x^2*ln(x^m)+1/4*I
/e*Pi*b*d*n*csgn(I*f)*csgn(I*f*x^m)^2*x+1/8*I*x^2*Pi*b*n*csgn(I*f)*csgn(I*x
^m)*csgn(I*f*x^m)+1/4*b*m*n*x^2-1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*csgn(I
*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*I*x^2*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^
2+1/4*I*x^2*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2*x^2*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2*x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*I*x^2*Pi
*b*n*csgn(I*f)*csgn(I*f*x^m)^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x
^2*ln(x^m)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*ln(x^m)-1
/8*I*m*Pi*b*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I*m*Pi*b*x^2*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*x^2*ln(x^m)-
1/4*I*x^2*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3-1/4*I*x^2*Pi*ln(c)*b*csgn(I*f*x^
m)^3+1/2*m/e^2*b*d^2*n*ln(e*x+d)*ln(-e*x/d)+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*csgn(I*f)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I
*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+1
/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*
f*x^m)+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^2*csgn(I*f)*csg
n(I*x^m)*csgn(I*f*x^m)+1/8*I*m*Pi*b*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-1/4*I/e*Pi*b*d*n*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*x-1/2/e^2
*b*d^2*n*ln(e*x+d)*ln(f)+1/2/e*ln(f)*b*d*n*x-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*ln(x^m)-1/4*I/e*Pi*b*d*n*csgn(I*f*x^m)^3*x
+1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3+1/8*b*Pi^2*csgn(I*c*(e*x+d)
^n)^3*x^2*csgn(I*f)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*cs
gn(I*x^m)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*cs
gn(I*f*x^m)^3+1/8*I*m*Pi*b*x^2*csgn(I*c*(e*x+d)^n)^3-1/4*I*x^2*ln(f)*Pi*b*c
sgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/4*I*x^2*Pi*ln(c)*b*csgn(I*
f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I*x^2*Pi*b*n*csgn(I*f*x^m)^3+1/4*I*x^2*Pi*
a*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)*x^2*csgn(I*f*x^m)^3+1/2*m/e^2*b*d^2*n*dilog(-e*x/d)+1/4*I/e*Pi*
b*d*n*csgn(I*x^m)*csgn(I*f*x^m)^2*x-1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*csgn(I*f
)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)*x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/e^2*b*d^2*n*ln(e*x+d)*Pi*cs
gn(I*x^m)*csgn(I*f*x^m)^2+1/4*I*x^2*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2+1/4*b*d^2*m*n*ln(e*x+d)/e^2-3/4*b*d*m*n*x/e
```

Maxima [A] time = 1.25455, size = 240, normalized size = 1.52

$$\frac{1}{4}\left(\frac{2\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bd^2n}{e^2}-\frac{be^2x^2\log\left(\left(ex+d\right)^n\right)+3\,bdenx-bd^2n\log\left(ex+d\right)+\left(ae^2-(e\right.}{e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] 1/4*(2*(log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d^2*n/e^
2 - (b*e^2*x^2*log((e*x + d)^n) + 3*b*d*e*n*x - b*d^2*n*log(e*x + d) + (a*e
^2 - (e^2*n - e^2*log(c))*b)*x^2)/e^2)*m - 1/4*(b*e*n*(2*d^2*log(e*x + d)/e
^3 + (e*x^2 - 2*d*x)/e^2) - 2*b*x^2*log((e*x + d)^n*c) - 2*a*x^2)*log(f*x^m
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bx\log\left((ex+d)^n c\right)\log\left(fx^m\right)+ax\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*x*log((e*x + d)^n*c)*log(f*x^m) + a*x*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)x\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*x*log(f*x^m), x)
```

3.361 $\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)\,dx$

Optimal. Leaf size=99

$$\frac{bdmn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{e}-x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bdn\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{e}-\frac{bdmn\log(d+ex)}{e}$$

```
[Out] 2*b*m*n*x - b*n*x*Log[f*x^m] - (b*d*m*n*Log[d + e*x])/e - x*(m - Log[f*x^m]
)*(a + b*Log[c*(d + e*x)^n]) + (b*d*n*Log[f*x^m]*Log[1 + (e*x)/d])/e + (b*d
*m*n*PolyLog[2, -((e*x)/d)])/e
```

Rubi [A] time = 0.0938871, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2422, 43, 2351, 2295, 2317, 2391}

$$\frac{bdmn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{e}-x\left(m-\log\left(fx^m\right)\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{bdn\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{e}-\frac{bdmn\log(d+ex)}{e}$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```


```
[Out] 2*b*m*n*x - b*n*x*Log[f*x^m] - (b*d*m*n*Log[d + e*x])/e - x*(m - Log[f*x^m]
)*(a + b*Log[c*(d + e*x)^n]) + (b*d*n*Log[f*x^m]*Log[1 + (e*x)/d])/e + (b*d
*m*n*PolyLog[2, -((e*x)/d)])/e
```


Rule 2422

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.)), x_Symbol] :> -Simp[x*(m - Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]), x] +
 (-Dist[b*e*n, Int[(x*Log[f*x^m])/(d + e*x), x], x] + Dist[b*e*m*n, Int[x/(
d + e*x), x], x]) /; FreeQ[{a, b, c, d, e, f, m, n}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
```

```
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \log\left(fx^m\right)(a+b\log(c(d+ex)^n))\,dx = -x\left(m-\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - (ben)\int \frac{x\log\left(fx^m\right)}{d+ex}\,dx + (bemn)$$
$$= -x\left(m-\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - (ben)\int\left(\frac{\log\left(fx^m\right)}{e} - \frac{d\log\left(fx^m\right.}{e(d+ex)}\right.$$
$$= bmnx - \frac{bdmn\log(d+ex)}{e} - x\left(m-\log\left(fx^m\right)\right)(a+b\log(c(d+ex)^n)) - (bn)\int$$
$$= 2bmnx - bnx\log\left(fx^m\right) - \frac{bdmn\log(d+ex)}{e} - x\left(m-\log\left(fx^m\right)\right)(a+b\log(c($$
$$= 2bmnx - bnx\log\left(fx^m\right) - \frac{bdmn\log(d+ex)}{e} - x\left(m-\log\left(fx^m\right)\right)(a+b\log(c($$

Mathematica [A] time = 0.0782515, size = 116, normalized size = 1.17

$$\frac{bdmn\text{PolyLog}\left(2,-\frac{ex}{d}\right)+\log\left(fx^m\right)(ex(a+b\log(c(d+ex)^n)-bn)+bdn\log(d+ex))-m\left(aex+bex\log(c(d+ex)^n)+\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] (Log[f*x^m]*(b*d*n*Log[d + e*x] + e*x*(a - b*n + b*Log[c*(d + e*x)^n])) - m
*(a*e*x - 2*b*e*n*x + b*d*n*(1 + Log[x])*Log[d + e*x] + b*e*x*Log[c*(d + e*
x)^n] - b*d*n*Log[x]*Log[1 + (e*x)/d]) + b*d*m*n*PolyLog[2, -((e*x)/d)])/e
```

Maple [C] time = 0.938, size = 1724, normalized size = 17.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] -1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*Pi^2*x*
b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*Pi^2*x*b*
csgn(I*f*x^m)^3*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*a*x*csgn(I*f*x^m)^3-n*b*ln(x
^m)*x+ln(x^m)*ln(c)*x*b+ln(f)*ln(c)*b*x-n*ln(f)*b*x+ln(f)*a*x+(b*x*ln(x^m)+
1/2*b*(-I*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*csgn(I*f)*csgn(I*f*x^
m)^2+I*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi*csgn(I*f*x^m)^3+2*ln(f)-2*m)*x)*
ln((e*x+d)^n)-m*b*d*n/e*ln(e*x+d)*ln(-e*x/d)-m*ln(c)*b*x-a*m*x+ln(x^m)*x*a+
1/e*n*b*ln(x^m)*d*ln(e*x+d)-1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*f*x^m)^3+2*b*
m*n*x+1/2*I*b*d*n/e*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*b*d*n/e*ln
```

```
(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*c
sgn(I*f*x^m)*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*m*Pi*b*x
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*m*Pi*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-1/4*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*c*(e
*x+d)^n)^2-m*b*d*n/e*dilog(-e*x/d)+1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn(
I*f*x^m)*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)
*csgn(I*f*x^m)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*x*b*csgn(I*
f)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*ln
(x^m)*Pi*x*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*m*Pi*b*x
*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*Pi*ln(c)*b*x*csgn(I*
x^m)*csgn(I*f*x^m)^2+1/2*I*n*Pi*b*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2
*I*Pi*ln(c)*b*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I*ln(f)*Pi*b*x*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*ln(f)*Pi*b*x*csgn(I*c*(e*
x+d)^n)^3-1/2*I*n*Pi*b*x*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*ln(f)*Pi*b*x*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(f)*Pi*b*x*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+1/2*I*Pi*a*x*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*Pi*a*x*csgn(I*x^m
)*csgn(I*f*x^m)^2+1/2*I*m*Pi*b*x*csgn(I*c*(e*x+d)^n)^3-1/2*I*ln(x^m)*Pi*x*b
*csgn(I*c*(e*x+d)^n)^3-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*csg
n(I*c*(e*x+d)^n)^3+1/2*I*ln(x^m)*Pi*x*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2
*I*ln(x^m)*Pi*x*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*x*b*csgn
(I*x^m)*csgn(I*f*x^m)^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+b*d
*n/e*ln(e*x+d)*ln(f)-1/4*Pi^2*x*b*csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)^2-1/4*Pi^2*x*b*csgn(I*x^m)*csgn(I*f*x^m)^2*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*n*Pi*b*x*csgn(I*f)*csgn(I*f*x^m)^2+1/4
*Pi^2*x*b*csgn(I*f*x^m)^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*x*b*csgn
(I*f*x^m)^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b*d*m*n/e+1/4*Pi^2*x*b*
csgn(I*f)*csgn(I*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*x*b*csgn(I*x^m)*cs
gn(I*f*x^m)^2*csgn(I*c*(e*x+d)^n)^3-1/2*I*Pi*ln(c)*b*x*csgn(I*f*x^m)^3+1/2*
I*n*Pi*b*x*csgn(I*f*x^m)^3-1/2*I*Pi*a*x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)
+1/2*I*Pi*ln(c)*b*x*csgn(I*f)*csgn(I*f*x^m)^2-b*d*m*n*ln(e*x+d)/e
```

Maxima [A] time = 1.22359, size = 188, normalized size = 1.9

$$-\left(\frac{\left(\log\left(ex+d\right)\log\left(-\frac{ex+d}{d}+1\right)+\mathrm{Li}_2\left(\frac{ex+d}{d}\right)\right)bdn}{e}+\frac{bdn\log\left(ex+d\right)+bex\log\left(\left(ex+d\right)^n\right)-\left(\left(2\,en-e\log\left(c\right)\right)b-ae\right)x}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] -((log(e*x + d)*log(-(e*x + d)/d + 1) + dilog((e*x + d)/d))*b*d*n/e + (b*d*
n*log(e*x + d) + b*e*x*log((e*x + d)^n) - ((2*e*n - e*log(c))*b - a*e)*x)/e
)*m - (b*e*n*(x/e - d*log(e*x + d)/e^2) - b*x*log((e*x + d)^n*c) - a*x)*log
(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b\log\left(\left(ex+d\right)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left((ex+d)^n c\right) + a\right) \log \left(fx^m\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m), x)
```

3.362 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x}\,dx$

Optimal. Leaf size=88

$$-bn\log\left(fx^m\right)\text{PolyLog}\left(2,-\frac{ex}{d}\right)+bmn\text{PolyLog}\left(3,-\frac{ex}{d}\right)+\frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2m}-\frac{bn\log\left(\frac{ex}{d}+1\right)\log}{2m}$$

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(2*m) - (b*n*Log[f*x^m]^2*Log[1 +
 (e*x)/d])/(2*m) - b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + b*m*n*PolyLog[3,
 -((e*x)/d)]
```

Rubi [A] time = 0.0742769, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2425, 2317, 2374, 6589}

$$-bn\log\left(fx^m\right)\text{PolyLog}\left(2,-\frac{ex}{d}\right)+bmn\text{PolyLog}\left(3,-\frac{ex}{d}\right)+\frac{\log^2\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2m}-\frac{bn\log\left(\frac{ex}{d}+1\right)\log}{2m}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(2*m) - (b*n*Log[f*x^m]^2*Log[1 +
 (e*x)/d])/(2*m) - b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + b*m*n*PolyLog[3,
 -((e*x)/d)]
```

Rule 2425

```
Int[(Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b
_.)))/(x_), x_Symbol] :> Simp[(Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(2*
m), x] - Dist[(b*e*n)/(2*m), Int[Log[f*x^m]^2/(d + e*x), x], x] /; FreeQ[{a
, b, c, d, e, f, m, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)(a+b\log(c(d+ex)^n))}{x}\,dx = \frac{\log^2\left(fx^m\right)(a+b\log(c(d+ex)^n))}{2m} - \frac{(ben)\int\frac{\log^2(fx^m)}{d+ex}\,dx}{2m}$$
$$= \frac{\log^2\left(fx^m\right)(a+b\log(c(d+ex)^n))}{2m} - \frac{bn\log^2\left(fx^m\right)\log\left(1+\frac{ex}{d}\right)}{2m} + (bn)\int \frac{\log}{}$$
$$= \frac{\log^2\left(fx^m\right)(a+b\log(c(d+ex)^n))}{2m} - \frac{bn\log^2\left(fx^m\right)\log\left(1+\frac{ex}{d}\right)}{2m} - bn\log\left(fx^m\right.$$
$$= \frac{\log^2\left(fx^m\right)(a+b\log(c(d+ex)^n))}{2m} - \frac{bn\log^2\left(fx^m\right)\log\left(1+\frac{ex}{d}\right)}{2m} - bn\log\left(fx^m\right.$$

Mathematica [A] time = 0.0677735, size = 128, normalized size = 1.45

$$\frac{1}{2}\left(-2bn\log\left(fx^m\right)\mathrm{PolyLog}\left(2,-\frac{ex}{d}\right)+2bmn\mathrm{PolyLog}\left(3,-\frac{ex}{d}\right)+\frac{a\log^2\left(fx^m\right)}{m}+2b\log(x)\log\left(fx^m\right)\log\left(c(d+ex)^n\right)-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] ((a*Log[f*x^m]^2)/m - b*m*Log[x]^2*Log[c*(d + e*x)^n] + 2*b*Log[x]*Log[f*x^
m]*Log[c*(d + e*x)^n] + b*m*n*Log[x]^2*Log[1 + (e*x)/d] - 2*b*n*Log[x]*Log[
f*x^m]*Log[1 + (e*x)/d] - 2*b*n*Log[f*x^m]*PolyLog[2, -((e*x)/d)] + 2*b*m*n
*PolyLog[3, -((e*x)/d)])/2
```

Maple [C] time = 0.6, size = 1749, normalized size = 19.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x,x)
```

```
[Out] -n*b*dilog((e*x+d)/d)*ln(f)+b*ln(c)*ln(f)*ln(x)-1/2*I*b*ln(c)*Pi*csgn(I*f*x
^m)^3*ln(x)+1/2*I*a*Pi*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)+(b*ln(x)*ln(x^m)-1/2
*b*m*ln(x)^2-1/2*I*Pi*ln(x)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/2*I*Pi*
ln(x)*b*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I*Pi*ln(x)*b*csgn(I*x^m)*csgn(I*f*x^m
)^2-1/2*I*Pi*ln(x)*b*csgn(I*f*x^m)^3+ln(f)*ln(x)*b)*ln((e*x+d)^n)+1/2*a/m*l
n(x^m)^2+1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-
1/2*I*b*ln(c)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln(x)+1/4*I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2/m*ln(x^m)^2+1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2*ln(f)*ln(x)-n*b*dilog((e*x+d)/d)*ln(x^m)+1/2*b*ln(c)/m*ln(x^
m)^2+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f)*csgn(I*x^
m)*csgn(I*f*x^m)*ln(x)+a*ln(f)*ln(x)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2/m*ln(x^m)^2+1/2*I*b*ln(c)*Pi*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)+1
/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*csgn(I*f)*csgn(I*
f*x^m)^2*ln(x)+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*c
sgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)-1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)/m*ln(x^m)^2-1/2*n*b*m*ln(x)^2*ln(1+e*x/d)+n*b*dilog((e*x+d
)/d)*ln(x)*m-n*b*m*ln(x)*polylog(2,-e*x/d)-n*b*ln(x)*ln((e*x+d)/d)*ln(f)+n*
b*ln(x)^2*ln((e*x+d)/d)*m-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)*ln(f)*ln(x)+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f)*
csgn(I*x^m)*csgn(I*f*x^m)*ln(x)-1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*f)*
```

```
csgn(I*f*x^m)^2-1/2*I*n*b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^
2+1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*f*x^m)^3-1/2*I*b*Pi*csgn(I*c*(e*x+d)
^n)^3*ln(f)*ln(x)-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/m*ln(x^m)^2-1/4*b*Pi^2*c
sgn(I*c*(e*x+d)^n)^3*csgn(I*f*x^m)^3*ln(x)-1/2*I*a*Pi*csgn(I*f*x^m)^3*ln(x)
-n*b*ln(x)*ln((e*x+d)/d)*ln(x^m)+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2
*ln(f)*ln(x)-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*csgn(I*f)*csgn(I*f*
x^m)^2*ln(x)+1/2*I*a*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)+1/2*I*n*b*ln(x)*l
n((e*x+d)/d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*b*Pi^2*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln(
x)-1/2*I*n*b*dilog((e*x+d)/d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*b*ln(c)*
Pi*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^
n)^2*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)^2*csgn(I*f)*csgn(I*f*x^m)^2*ln(x)-1/4*b*Pi^2*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2*csgn(I*x^m)*csgn(I*f*x^m)^2*ln(x)-1/2*I*n*b*dilog((e
*x+d)/d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn
(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln(x)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)*csgn(I*f*x^m)^3*ln(x)+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2*csgn(I*f*x^m)^3*ln(x)+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2*csgn(I*f*x^m)^3*ln(x)+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn(I*f)*
csgn(I*f*x^m)^2*ln(x)+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*csgn(I*x^m)*csgn(I*f
*x^m)^2*ln(x)-1/2*I*a*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)*ln(x)+1/2*I*n*
b*ln(x)*ln((e*x+d)/d)*Pi*csgn(I*f*x^m)^3+b*m*n*polylog(3,-e*x/d)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}\left(bm\log(x)^2 - 2b\log\left(f\right)\log(x) - 2b\log(x)\log(x^m)\right)\log\left((ex+d)^n\right) - \int -\frac{bemnx\log(x)^2 - 2benx\log\left(f\right)\log(x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="maxima")
```

```
[Out] -1/2*(b*m*log(x)^2 - 2*b*log(f)*log(x) - 2*b*log(x)*log(x^m))*log((e*x + d)
^n) - integrate(-1/2*(b*e*m*n*x*log(x)^2 - 2*b*e*n*x*log(f)*log(x) + 2*b*d*
log(c)*log(f) + 2*a*d*log(f) + 2*(b*e*log(c)*log(f) + a*e*log(f))*x - 2*(b*
e*n*x*log(x) - b*d*log(c) - a*d - (b*e*log(c) + a*e)*x)*log(x^m))/(e*x^2 +
d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right) + a\log\left(fx^m\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(fx^m\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x, x)
```

3.363 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^2} dx$

Optimal. Leaf size=102

$$\frac{bemn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{d}-\left(\frac{\log\left(fx^m\right)}{x}+\frac{m}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)-\frac{ben\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{d}+\frac{bemn\log(x)}{d}-\frac{be\!\!}{}$$

```
[Out] (b*e*m*n*Log[x])/d - (b*e*n*Log[1 + d/(e*x)]*Log[f*x^m])/d - (b*e*m*n*Log[d
 + e*x])/d - (m/x + Log[f*x^m]/x)*(a + b*Log[c*(d + e*x)^n]) + (b*e*m*n*Pol
yLog[2, -(d/(e*x))])/d
```

Rubi [A] time = 0.0954819, antiderivative size = 120, normalized size of antiderivative = 1.18, number of steps used = 8, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2426, 2344, 2301, 2317, 2391, 36, 29, 31}

$$-\frac{bemn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{d}-\left(\frac{\log\left(fx^m\right)}{x}+\frac{m}{x}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+\frac{ben\log^2\left(fx^m\right)}{2dm}-\frac{ben\log\left(\frac{ex}{d}+1\right)\log\left(fx^m\right)}{d}+$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] (b*e*m*n*Log[x])/d + (b*e*n*Log[f*x^m]^2)/(2*d*m) - (b*e*m*n*Log[d + e*x])/
d - (m/x + Log[f*x^m]/x)*(a + b*Log[c*(d + e*x)^n]) - (b*e*n*Log[f*x^m]*Log
[1 + (e*x)/d])/d - (b*e*m*n*PolyLog[2, -((e*x)/d)])/d
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^2}\,dx = -\left(\frac{m}{x}+\frac{\log(fx^m)}{x}\right)(a+b\log(c(d+ex)^n)) + (ben)\int \frac{\log(fx^m)}{x(d+ex)}\,dx + (bemn)$$

$$= -\left(\frac{m}{x}+\frac{\log(fx^m)}{x}\right)(a+b\log(c(d+ex)^n)) + \frac{(ben)\int \frac{\log(fx^m)}{x}\,dx}{d} - \frac{(be^2n)\int}{d}$$

$$= \frac{bemn\log(x)}{d} + \frac{ben\log^2(fx^m)}{2dm} - \frac{bemn\log(d+ex)}{d} - \left(\frac{m}{x}+\frac{\log(fx^m)}{x}\right)(a+b$$

$$= \frac{bemn\log(x)}{d} + \frac{ben\log^2(fx^m)}{2dm} - \frac{bemn\log(d+ex)}{d} - \left(\frac{m}{x}+\frac{\log(fx^m)}{x}\right)(a+b$$

Mathematica [A] time = 0.108873, size = 111, normalized size = 1.09

$$-\frac{2bemnx\text{PolyLog}\left(2,-\frac{ex}{d}\right)+2\left(\log(fx^m)+m\right)(ad+bd\log(c(d+ex)^n)+benx\log(d+ex))-2benx\log(x)\left(m\log(d+\right.}{2dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -(b*e*m*n*x*Log[x]^2 + 2*(m + Log[f*x^m])*(a*d + b*e*n*x*Log[d + e*x] + b*d
*Log[c*(d + e*x)^n]) - 2*b*e*n*x*Log[x]*(m + Log[f*x^m] + m*Log[d + e*x] -
m*Log[1 + (e*x)/d]) + 2*b*e*m*n*x*PolyLog[2, -((e*x)/d)])/(2*d*x)
```

Maple [C] time = 0.796, size = 1859, normalized size = 18.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^2,x)
```

```
[Out] (-b/x*ln(x^m)-1/2*(-I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*b*csgn(
I*f)*csgn(I*f*x^m)^2+I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi*b*csgn(I*f*x^m
)^3+2*b*ln(f)+2*b*m)/x)*ln((e*x+d)^n)+1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/x*ln
(x^m)+1/2*I/x*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/2*I/x*Pi*a*csgn(I*f)*csgn(I*f*
x^m)^2-e*n*b*ln(x^m)/d*ln(e*x+d)+e*n*b*ln(x^m)/d*ln(x)-1/x*ln(f)*a-b*ln(c)/
x*ln(x^m)-1/x*ln(c)*b*m-1/x*ln(f)*ln(c)*b-1/2*I/x*Pi*b*m*csgn(I*c)*csgn(I*c
*(e*x+d)^n)^2-1/x*a*m+m*e*n*b/d*ln(e*x+d)*ln(-e*x/d)-a/x*ln(x^m)+m*e*n*b/d*
dilog(-e*x/d)+1/2*I*e*b*n/d*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/2*I*e*b*
n/d*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/2*I/x*Pi*ln(c)*b*csgn(I*f)*csg
n(I*f*x^m)^2-1/2*I/x*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*b*Pi^
2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4
*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*x^m)*csg
n(I*f*x^m)-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csg
n(I*x^m)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)/x*csgn(I*f)*csgn(I*f*x^m)^2+1/2*I/x*Pi*a*csgn(I*f)*csgn(I*x^m)*csg
n(I*f*x^m)-1/2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*ln(x^m)+1/2
*I/x*Pi*a*csgn(I*f*x^m)^3-1/2/d*b*e*m*n*ln(x)^2-1/2*I*e*b*n/d*ln(x)*Pi*csgn
(I*f*x^m)^3+1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*ln
(x^m)+1/2*I*e*b*n/d*ln(e*x+d)*Pi*csgn(I*f*x^m)^3+1/2*I/x*ln(f)*Pi*b*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I/x*Pi*ln(c)*b*csgn(I*f)*csgn(
I*x^m)*csgn(I*f*x^m)+1/2*I/x*Pi*b*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*csgn(I*f)*csgn(I*f*x^m)^2-1/4*b
*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*b*Pi^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f*x^m)^3+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I*e*b
*n/d*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I*e*b*n/d*ln(x)*Pi*csgn(I
*f)*csgn(I*f*x^m)^2+e*b*n/d*ln(x)*ln(f)-e*b*n/d*ln(e*x+d)*ln(f)+1/2*I*e*b*n
/d*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I*e*b*n/d*ln(x)*Pi*
csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2*I/x*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2-1/2*I/x*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*
b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f*x^m)^3-1/2*I/x*Pi
*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*I/x*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/2
*I/x*Pi*ln(c)*b*csgn(I*f*x^m)^3-1/2*I/x*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2-1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*ln(x^m)+1/4*b*Pi^2
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*b*Pi^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x*csgn(I*f)*csgn(I*f*x^m)^2+1/4*b*Pi^2*c
sgn(I*c*(e*x+d)^n)^3/x*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4*b*Pi^2*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x*csgn(I*f*x^m)^3+b*e*m*n*ln(x)/
d-b*e*m*n*ln(e*x+d)/d+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x*csgn(I*f*x^m)^3
```

Maxima [A] time = 1.241, size = 219, normalized size = 2.15

$$-\frac{1}{2}\left(\frac{2\left(\log\left(\frac{ex}{d}+1\right)\log\left(x\right)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)ben}{d}+\frac{2\,ben\log\left(ex+d\right)}{d}-\frac{2\,benx\log\left(ex+d\right)\log\left(x\right)-benx\log\left(x\right)^2+2\,benx}{dx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e*n/d + 2*b*e*n*log(e*x +
 d)/d - (2*b*e*n*x*log(e*x + d)*log(x) - b*e*n*x*log(x)^2 + 2*b*e*n*x*log(x
) - 2*b*d*log((e*x + d)^n) - 2*b*d*log(c) - 2*a*d)/(d*x))*m - (b*e*n*(log(e
*x + d)/d - log(x)/d) + b*log((e*x + d)^n*c)/x + a/x)*log(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(fx^m\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^2, x)
```

3.364 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^3}\,dx$

Optimal. Leaf size=156

$$-\frac{be^2mn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{2d^2}-\frac{1}{4}\left(\frac{2\log\left(fx^m\right)}{x^2}+\frac{m}{x^2}\right)(a+b\log(c(d+ex)^n))+\frac{be^2n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{2d^2}-\frac{be^2mn\log}{4d^2}$$

```
[Out] (-3*b*e*m*n)/(4*d*x) - (b*e^2*m*n*Log[x])/(4*d^2) - (b*e*n*Log[f*x^m])/(2*d
*x) + (b*e^2*n*Log[1 + d/(e*x)]*Log[f*x^m])/(2*d^2) + (b*e^2*m*n*Log[d + e*
x])/(4*d^2) - ((m/x^2 + (2*Log[f*x^m])/x^2)*(a + b*Log[c*(d + e*x)^n]))/4 -
 (b*e^2*m*n*PolyLog[2, -(d/(e*x))])/(2*d^2)
```

Rubi [A] time = 0.151057, antiderivative size = 175, normalized size of antiderivative = 1.12, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 44, 2351, 2304, 2301, 2317, 2391}

$$\frac{be^2mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{2d^2}-\frac{1}{4}\left(\frac{2\log\left(fx^m\right)}{x^2}+\frac{m}{x^2}\right)(a+b\log(c(d+ex)^n))-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be^2n\log\left(\frac{ex}{d}+1\right)\log\left(f\right.}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] (-3*b*e*m*n)/(4*d*x) - (b*e^2*m*n*Log[x])/(4*d^2) - (b*e*n*Log[f*x^m])/(2*d
*x) - (b*e^2*n*Log[f*x^m]^2)/(4*d^2*m) + (b*e^2*m*n*Log[d + e*x])/(4*d^2) -
 ((m/x^2 + (2*Log[f*x^m])/x^2)*(a + b*Log[c*(d + e*x)^n]))/4 + (b*e^2*n*Log
[f*x^m]*Log[1 + (e*x)/d])/(2*d^2) + (b*e^2*m*n*PolyLog[2, -((e*x)/d)])/(2*d
^2)
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)(a+b\log(c(d+ex)^n))}{x^3}dx = -\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)(a+b\log(c(d+ex)^n))+\frac{1}{2}(ben)\int\frac{\log\left(fx^m\right)}{x^2(d+ex)}dx+\frac{1}{4}($$

$$=-\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)(a+b\log(c(d+ex)^n))+\frac{1}{2}(ben)\int\left(\frac{\log\left(fx^m\right)}{dx^2}-\frac{e\log}{\ldots}\right.$$

$$=-\frac{bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}+\frac{be^2mn\log(d+ex)}{4d^2}-\frac{1}{4}\left(\frac{m}{x^2}+\frac{2\log\left(fx^m\right)}{x^2}\right)(a+b\log$$

$$=-\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be^2mn\log(d+}{4d^2}$$

$$=-\frac{3bemn}{4dx}-\frac{be^2mn\log(x)}{4d^2}-\frac{ben\log\left(fx^m\right)}{2dx}-\frac{be^2n\log^2\left(fx^m\right)}{4d^2m}+\frac{be^2mn\log(d+}{4d^2}$$

Mathematica [A] time = 0.125022, size = 204, normalized size = 1.31

$$-\frac{-2be^2mnx^2\text{PolyLog}\left(2,-\frac{ex}{d}\right)+2ad^2\log\left(fx^m\right)+ad^2m+2bd^2\log\left(fx^m\right)\log(c(d+ex)^n)+bd^2m\log(c(d+ex)^n)-2be^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] -(a*d^2*m + 3*b*d*e*m*n*x - b*e^2*m*n*x^2*Log[x]^2 + 2*a*d^2*Log[f*x^m] + 2
*b*d*e*n*x*Log[f*x^m] - b*e^2*m*n*x^2*Log[d + e*x] - 2*b*e^2*n*x^2*Log[f*x^
m]*Log[d + e*x] + b*d^2*m*Log[c*(d + e*x)^n] + 2*b*d^2*Log[f*x^m]*Log[c*(d
+ e*x)^n] + b*e^2*n*x^2*Log[x]*(m + 2*Log[f*x^m] + 2*m*Log[d + e*x] - 2*m*L
og[1 + (e*x)/d]) - 2*b*e^2*m*n*x^2*PolyLog[2, -((e*x)/d)])/(4*d^2*x^2)
```

Maple [C] time = 0.841, size = 2051, normalized size = 13.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^3,x)
```

```
[Out] -1/4*I/d*e*b*n/x*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/4
*I/d^2*b*e^2*n*ln(e*x+d)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4/d^2*b*e^2*m*n*l
n(x)^2+1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+(-1/2
*b/x^2*ln(x^m)-1/4*(-I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+I*Pi*b*csgn
(I*f)*csgn(I*f*x^m)^2+I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-I*Pi*b*csgn(I*f*x^
m)^3+2*b*ln(f)+b*m)/x^2)*ln((e*x+d)^n)+1/4*I/d*e*b*n/x*Pi*csgn(I*f)*csgn(I*
x^m)*csgn(I*f*x^m)+1/8*I/x^2*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/4*I/x^2*Pi*a*cs
gn(I*f)*csgn(I*f*x^m)^2-1/4*I/x^2*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*I*b*
Pi*csgn(I*c*(e*x+d)^n)^3/x^2*ln(x^m)-1/4/x^2*a*m-1/4*I/x^2*ln(f)*Pi*b*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I/x^2*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*
x^m)^2-1/4*I/x^2*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I/d^2*b*e^2*n*l
n(e*x+d)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/2/x^2*ln(f)*a+1/4*I/x^2*P
i*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/x^2*ln(f)*Pi*b*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*I/d^2*b*e^2*n
*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/2*b*ln(c)/x^2*ln(x^m)-1/2/x^2*ln(f)*ln(c)*b
-1/4/x^2*ln(c)*b*m+1/4*I/x^2*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*
c*(e*x+d)^n)-1/2*a/x^2*ln(x^m)-1/2*m*b*e^2*n/d^2*dilog(-e*x/d)+1/4*I/d^2*b*
e^2*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/4*I/d*e*b*n/x*Pi*csgn(I*f)*c
sgn(I*f*x^m)^2-1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*b
*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f)*csgn(I*f*x^m)^2-1/8*b*Pi^2*csgn(I
*c*(e*x+d)^n)^3/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+1/2*e^2*n*b*ln(x^m)/d^2*ln(
e*x+d)-1/2*e^2*n*b*ln(x^m)/d^2*ln(x)-1/2*e*n*b*ln(x^m)/d/x-1/2*m*b*e^2*n/d^
2*ln(e*x+d)*ln(-e*x/d)-1/8*I/x^2*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f*x^m)^3-1/8*b*P
i^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f*x^m)^3+1/4*I/x^2*l
n(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/4*I/x^2*Pi*ln(c)*b*csgn(I*f*x^m)^3+1/4*I/
d^2*b*e^2*n*ln(x)*Pi*csgn(I*f*x^m)^3-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)/x^2*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/x^2*Pi*b*m*csgn(I*
c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*ln(
x^m)+1/4*I/d*e*b*n/x*Pi*csgn(I*f*x^m)^3+1/4*I/x^2*Pi*a*csgn(I*f*x^m)^3+1/8*
b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f*x^m)^3+1/4*I/x^2*Pi*ln(c)*b*csgn(
I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I/x^2*Pi*b*m*csgn(I*c)*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)/x^2*ln(x^m)-1/4*I/d^2*b*e^2*n*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/2/d
*e*b*n/x*ln(f)+1/2/d^2*b*e^2*n*ln(e*x+d)*ln(f)-1/2/d^2*b*e^2*n*ln(x)*ln(f)+
1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^2*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/
8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^2*csgn(I*f*x^m)^
3+1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*f*x^m)^2+
1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*x^m)*csgn(I*f*x^m)^2+
1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*f)*csgn(I*f*x
^m)^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*ln(x^m)+1/8*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^2*csgn(I*x^m)*csgn(I*f*x^m)^
2-1/4*b*e^2*m*n*ln(x)/d^2+1/4*b*e^2*m*n*ln(e*x+d)/d^2-3/4*b*e*m*n/d/x
```

Maxima [A] time = 1.22992, size = 267, normalized size = 1.71

$$\frac{1}{4}\left(\frac{2\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)be^2n}{d^2}+\frac{be^2n\log(ex+d)}{d^2}-\frac{2\,be^2nx^2\log(ex+d)\log(x)-be^2nx^2\log(x)^2+be^2nx^2}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e^2*n/d^2 + b*e^2*n*log(e*
x + d)/d^2 - (2*b*e^2*n*x^2*log(e*x + d)*log(x) - b*e^2*n*x^2*log(x)^2 + b*
e^2*n*x^2*log(x) + 3*b*d*e*n*x + b*d^2*log((e*x + d)^n) + b*d^2*log(c) + a*
d^2)/(d^2*x^2))*m + 1/2*(b*e*n*(e*log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)
) - b*log((e*x + d)^n*c)/x^2 - a/x^2)*log(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)\log\left(fx^m\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^3, x)
```

3.365 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^4}\,dx$

Optimal. Leaf size=193

$$\frac{be^3mn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{3d^3}-\frac{1}{9}\left(\frac{3\log\left(fx^m\right)}{x^3}+\frac{m}{x^3}\right)(a+b\log\left(c(d+ex)^n\right))-\frac{be^3n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{3d^3}+\frac{be^2n\log\left(f\right.}{3d^2x}$$

```
[Out] (-5*b*e*m*n)/(36*d*x^2) + (4*b*e^2*m*n)/(9*d^2*x) + (b*e^3*m*n*Log[x])/(9*d
^3) - (b*e*n*Log[f*x^m])/(6*d*x^2) + (b*e^2*n*Log[f*x^m])/(3*d^2*x) - (b*e^
3*n*Log[1 + d/(e*x)]*Log[f*x^m])/(3*d^3) - (b*e^3*m*n*Log[d + e*x])/(9*d^3)
 - ((m/x^3 + (3*Log[f*x^m])/x^3)*(a + b*Log[c*(d + e*x)^n]))/9 + (b*e^3*m*n
*PolyLog[2, -(d/(e*x))])/(3*d^3)
```

Rubi [A] time = 0.181487, antiderivative size = 212, normalized size of antiderivative = 1.1, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 44, 2351, 2304, 2301, 2317, 2391}

$$-\frac{be^3mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{3d^3}-\frac{1}{9}\left(\frac{3\log\left(fx^m\right)}{x^3}+\frac{m}{x^3}\right)(a+b\log\left(c(d+ex)^n\right))+\frac{be^3n\log^2\left(fx^m\right)}{6d^3m}-\frac{be^3n\log\left(\frac{ex}{d}+1\right)\log\left(\right.}{3d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] (-5*b*e*m*n)/(36*d*x^2) + (4*b*e^2*m*n)/(9*d^2*x) + (b*e^3*m*n*Log[x])/(9*d
^3) - (b*e*n*Log[f*x^m])/(6*d*x^2) + (b*e^2*n*Log[f*x^m])/(3*d^2*x) + (b*e^
3*n*Log[f*x^m]^2)/(6*d^3*m) - (b*e^3*m*n*Log[d + e*x])/(9*d^3) - ((m/x^3 +
(3*Log[f*x^m])/x^3)*(a + b*Log[c*(d + e*x)^n]))/9 - (b*e^3*n*Log[f*x^m]*Log
[1 + (e*x)/d])/(3*d^3) - (b*e^3*m*n*PolyLog[2, -((e*x)/d)])/(3*d^3)
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)(a+b\log(c(d+ex)^n))}{x^4}\,dx = -\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log\left(fx^m\right)}{x^3}\right)(a+b\log(c(d+ex)^n))+\frac{1}{3}(ben)\int\frac{\log\left(fx^m\right)}{x^3(d+ex)}\,dx+\frac{1}{9}($$

$$= -\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log\left(fx^m\right)}{x^3}\right)(a+b\log(c(d+ex)^n))+\frac{1}{3}(ben)\int\left(\frac{\log\left(fx^m\right)}{dx^3}-\frac{e\log}{d}\right.$$

$$= -\frac{bemn}{18dx^2}+\frac{be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{be^3mn\log(d+ex)}{9d^3}-\frac{1}{9}\left(\frac{m}{x^3}+\frac{3\log\left(fx^m\right)}{x^3}\right.$$

$$= -\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log\left(fx^m\right)}{6dx^2}+\frac{be^2n\log\left(fx^m\right)}{3d^2x}+\frac{be^3 n}{}$$

$$= -\frac{5bemn}{36dx^2}+\frac{4be^2mn}{9d^2x}+\frac{be^3mn\log(x)}{9d^3}-\frac{ben\log\left(fx^m\right)}{6dx^2}+\frac{be^2n\log\left(fx^m\right)}{3d^2x}+\frac{be^3 n}{}$$

Mathematica [A] time = 0.143647, size = 240, normalized size = 1.24

$$-\frac{12be^3mnx^3\text{PolyLog}\left(2,-\frac{ex}{d}\right)+12ad^3\log\left(fx^m\right)+4ad^3m+12bd^3\log\left(fx^m\right)\log\left(c(d+ex)^n\right)+4bd^3m\log\left(c(d+ex)^n\right)+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -(4*a*d^3*m + 5*b*d^2*e*m*n*x - 16*b*d*e^2*m*n*x^2 + 6*b*e^3*m*n*x^3*Log[x]
^2 + 12*a*d^3*Log[f*x^m] + 6*b*d^2*e*n*x*Log[f*x^m] - 12*b*d*e^2*n*x^2*Log[
f*x^m] + 4*b*e^3*m*n*x^3*Log[d + e*x] + 12*b*e^3*n*x^3*Log[f*x^m]*Log[d + e
*x] + 4*b*d^3*m*Log[c*(d + e*x)^n] + 12*b*d^3*Log[f*x^m]*Log[c*(d + e*x)^n]
 - 4*b*e^3*n*x^3*Log[x]*(m + 3*Log[f*x^m] + 3*m*Log[d + e*x] - 3*m*Log[1 +
(e*x)/d]) + 12*b*e^3*m*n*x^3*PolyLog[2, -((e*x)/d)])/(36*d^3*x^3)
```

Maple [C] time = 0.874, size = 2220, normalized size = 11.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^4,x)
```

```
[Out] -1/6*I/d^2*b*e^2*n/x*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/3/x^3*ln(f)*a
+(-1/3*b/x^3*ln(x^m)-1/18*(-3*I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+3*
I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+3*I*Pi*b*csgn(I*x^m)*csgn(I*f*x^m)^2-3*I*P
i*b*csgn(I*f*x^m)^3+6*b*ln(f)+2*b*m)/x^3)*ln((e*x+d)^n)+1/6*I/x^3*ln(f)*Pi*
b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*a/x^3*ln(x^m)-1/12*b*
Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*x^m)*csgn
(I*f*x^m)-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*c
sgn(I*f)*csgn(I*f*x^m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2-1/9/x^3*a*m-1/6/d^3*b*e^3*m*n*ln(
x)^2-1/18*I/x^3*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/18*I/x^3*Pi*b*m*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*m*b*e^3*n/d^3*dilog(-e*x/d)-1/12*
b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x
^m)+1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*ln(x^m)+
1/6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/3*b*ln(c)/x^3*ln(x^m)-1/6*
I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*ln(x^m)-1/6*I*b*Pi*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*ln(x^m)+1/6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csgn(
I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*f)*csgn(I*
x^m)*csgn(I*f*x^m)+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3*csgn(I*f*x^m)^3+1/
6*I/x^3*Pi*a*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^3
*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*f*x^
m)^3+1/12*I/d*e*b*n/x^2*Pi*csgn(I*f*x^m)^3-1/6*I/d^2*b*e^2*n/x*Pi*csgn(I*f*
x^m)^3+1/12*I/d*e*b*n/x^2*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/6*I/x^3*
Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/6*I/x^3*ln(f)*Pi*b*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2-1/6*I/x^3*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)^2+1/6*I/x^3*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/18*I/x^3*Pi
*b*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/6*I*b*Pi*csgn(I*c*(e
*x+d)^n)^3/x^3*ln(x^m)-1/6*I/x^3*Pi*a*csgn(I*f)*csgn(I*f*x^m)^2-1/6*I/x^3*P
i*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I/x^3*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3-
1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f*x^m)^3-1/12*b*Pi^2
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f*x^m)^3-1/12*b*Pi^2*cs
gn(I*c*(e*x+d)^n)^3/x^3*csgn(I*f)*csgn(I*f*x^m)^2+1/3*m*b*e^3*n/d^3*ln(e*x+
d)*ln(-e*x/d)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x
^3*csgn(I*f*x^m)^3+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*f
)*csgn(I*f*x^m)^2+1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/
12*I/d*e*b*n/x^2*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/6*e*n*b*ln(x^m)/d/x^2+1/12*
b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^3*csgn(I*f)*csgn(I
*x^m)*csgn(I*f*x^m)+1/6*I/d^2*b*e^2*n/x*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/12
*I/d*e*b*n/x^2*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I/d^2*b*e^2*n/x*Pi*csgn(I
*f)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^3*csgn(I*
x^m)*csgn(I*f*x^m)^2+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^
3*csgn(I*f)*csgn(I*f*x^m)^2+1/3/d^3*b*e^3*n*ln(x)*ln(f)-1/3/d^3*b*e^3*n*ln(
e*x+d)*ln(f)+1/3/d^2*b*e^2*n/x*ln(f)-1/6/d*e*b*n/x^2*ln(f)-1/12*b*Pi^2*csgn
(I*c*(e*x+d)^n)^3/x^3*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I/x^3*Pi*ln(c)*b*csgn
(I*f*x^m)^3+1/18*I/x^3*Pi*b*m*csgn(I*c*(e*x+d)^n)^3-1/6*I/d^3*b*e^3*n*ln(e*
x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/6*I/d^3*b*e^3*n*ln(e*x+d)*Pi*csgn(I*x^m
)*csgn(I*f*x^m)^2-1/6*I/x^3*Pi*ln(c)*b*csgn(I*f)*csgn(I*f*x^m)^2-1/6*I/x^3*
Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2+1/6*I/d^3*b*e^3*n*ln(x)*Pi*csgn(I*f)
*csgn(I*f*x^m)^2+1/3*e^3*n*b*ln(x^m)/d^3*ln(x)+1/3*e^2*n*b*ln(x^m)/d^2/x-1/
3*e^3*n*b*ln(x^m)/d^3*ln(e*x+d)-1/3/x^3*ln(f)*ln(c)*b-1/9/x^3*ln(c)*b*m+1/9
```

```
*b*e^3*m*n*ln(x)/d^3-1/9*b*e^3*m*n*ln(e*x+d)/d^3-5/36*b*e*m*n/d/x^2+4/9*b*e
^2*m*n/x/d^2
```

Maxima [A] time = 1.23475, size = 309, normalized size = 1.6

$$-\frac{1}{36}\left(\frac{12\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)be^3n}{d^3}+\frac{4\,be^3n\log(ex+d)}{d^3}-\frac{12\,be^3nx^3\log(ex+d)\log(x)-6\,be^3nx^3\log(x)^2+\cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="maxima")
```

```
[Out] -1/36*(12*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e^3*n/d^3 + 4*b*e^3*n*l
og(e*x + d)/d^3 - (12*b*e^3*n*x^3*log(e*x + d)*log(x) - 6*b*e^3*n*x^3*log(x
)^2 + 4*b*e^3*n*x^3*log(x) + 16*b*d*e^2*n*x^2 - 5*b*d^2*e*n*x - 4*b*d^3*log
((e*x + d)^n) - 4*b*d^3*log(c) - 4*a*d^3)/(d^3*x^3))*m - 1/6*(b*e*n*(2*e^2*
log(e*x + d)/d^3 - 2*e^2*log(x)/d^3 - (2*e*x - d)/(d^2*x^2)) + 2*b*log((e*x
 + d)^n*c)/x^3 + 2*a/x^3)*log(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^4, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**4,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(fx^m\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^4,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^4, x)
```

3.366 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))}{x^5}\,dx$

Optimal. Leaf size=230

$$-\frac{be^4mn\text{PolyLog}\left(2,-\frac{d}{ex}\right)}{4d^4}-\frac{1}{16}\left(\frac{4\log\left(fx^m\right)}{x^4}+\frac{m}{x^4}\right)(a+b\log(c(d+ex)^n))+\frac{be^4n\log\left(\frac{d}{ex}+1\right)\log\left(fx^m\right)}{4d^4}-\frac{be^3n\log(}{4d^3}$$

```
[Out] (-7*b*e*m*n)/(144*d*x^3) + (3*b*e^2*m*n)/(32*d^2*x^2) - (5*b*e^3*m*n)/(16*d
^3*x) - (b*e^4*m*n*Log[x])/(16*d^4) - (b*e*n*Log[f*x^m])/(12*d*x^3) + (b*e^
2*n*Log[f*x^m])/(8*d^2*x^2) - (b*e^3*n*Log[f*x^m])/(4*d^3*x) + (b*e^4*n*Log
[1 + d/(e*x)]*Log[f*x^m])/(4*d^4) + (b*e^4*m*n*Log[d + e*x])/(16*d^4) - ((m
/x^4 + (4*Log[f*x^m])/x^4)*(a + b*Log[c*(d + e*x)^n]))/16 - (b*e^4*m*n*Poly
Log[2, -(d/(e*x))])/(4*d^4)
```

Rubi [A] time = 0.218946, antiderivative size = 249, normalized size of antiderivative = 1.08, number of steps used = 11, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {2426, 44, 2351, 2304, 2301, 2317, 2391}

$$\frac{be^4mn\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{4d^4}-\frac{1}{16}\left(\frac{4\log\left(fx^m\right)}{x^4}+\frac{m}{x^4}\right)(a+b\log(c(d+ex)^n))-\frac{be^4n\log^2\left(fx^m\right)}{8d^4m}+\frac{be^4n\log\left(\frac{ex}{d}+1\right)\log(}{4d^4}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^5,x]
```

```
[Out] (-7*b*e*m*n)/(144*d*x^3) + (3*b*e^2*m*n)/(32*d^2*x^2) - (5*b*e^3*m*n)/(16*d
^3*x) - (b*e^4*m*n*Log[x])/(16*d^4) - (b*e*n*Log[f*x^m])/(12*d*x^3) + (b*e^
2*n*Log[f*x^m])/(8*d^2*x^2) - (b*e^3*n*Log[f*x^m])/(4*d^3*x) - (b*e^4*n*Log
[f*x^m]^2)/(8*d^4*m) + (b*e^4*m*n*Log[d + e*x])/(16*d^4) - ((m/x^4 + (4*Log
[f*x^m])/x^4)*(a + b*Log[c*(d + e*x)^n]))/16 + (b*e^4*n*Log[f*x^m]*Log[1 +
(e*x)/d])/(4*d^4) + (b*e^4*m*n*PolyLog[2, -((e*x)/d)])/(4*d^4)
```

Rule 2426

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))*((g_.)*(x_))^(q_.), x_Symbol] :> -Simp[(((m*(g*x)^(q + 1))/(q + 1) - (g
*x)^(q + 1)*Log[f*x^m])*(a + b*Log[c*(d + e*x)^n]))/(g*(q + 1)), x] + (-Dis
t[(b*e*n)/(g*(q + 1)), Int[((g*x)^(q + 1)*Log[f*x^m])/(d + e*x), x], x] + D
ist[(b*e*m*n)/(g*(q + 1)^2), Int[(g*x)^(q + 1)/(d + e*x), x], x]) /; FreeQ[
{a, b, c, d, e, f, g, m, n, q}, x] && NeQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
```

```
Q[r]))
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)(a+b\log(c(d+ex)^n))}{x^5}\,dx = -\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\log\left(fx^m\right)}{x^4}\right)(a+b\log(c(d+ex)^n))+\frac{1}{4}(ben)\int\frac{\log\left(fx^m\right)}{x^4(d+ex)}\,dx+\frac{1}{1}\ldots$$

$$= -\frac{1}{16}\left(\frac{m}{x^4}+\frac{4\log\left(fx^m\right)}{x^4}\right)(a+b\log(c(d+ex)^n))+\frac{1}{4}(ben)\int\left(\frac{\log\left(fx^m\right)}{dx^4}-\frac{e\log\ldots}{}\right.$$

$$= -\frac{bemn}{48dx^3}+\frac{be^2mn}{32d^2x^2}-\frac{be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}+\frac{be^4mn\log(d+ex)}{16d^4}-\frac{1}{16}\left(\frac{m}{x^4}+\ldots\right.$$

$$= -\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log\left(fx^m\right)}{12dx^3}+\frac{be^2n\log\left(f\ldots\right.}{8d^2x^2}$$

$$= -\frac{7bemn}{144dx^3}+\frac{3be^2mn}{32d^2x^2}-\frac{5be^3mn}{16d^3x}-\frac{be^4mn\log(x)}{16d^4}-\frac{ben\log\left(fx^m\right)}{12dx^3}+\frac{be^2n\log\left(f\ldots\right.}{8d^2x^2}$$

Mathematica [A] time = 0.150132, size = 273, normalized size = 1.19

$$-\frac{-72be^4mnx^4\text{PolyLog}\left(2,-\frac{ex}{d}\right)+72ad^4\log\left(fx^m\right)+18ad^4m+72bd^4\log\left(fx^m\right)\log(c(d+ex)^n)+18bd^4m\log(c(d+ex)\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n]))/x^5,x]
```

```
[Out] -(18*a*d^4*m + 14*b*d^3*e*m*n*x - 27*b*d^2*e^2*m*n*x^2 + 90*b*d*e^3*m*n*x^3
 - 36*b*e^4*m*n*x^4*Log[x]^2 + 72*a*d^4*Log[f*x^m] + 24*b*d^3*e*n*x*Log[f*x
^m] - 36*b*d^2*e^2*n*x^2*Log[f*x^m] + 72*b*d*e^3*n*x^3*Log[f*x^m] - 18*b*e^
4*m*n*x^4*Log[d + e*x] - 72*b*e^4*n*x^4*Log[f*x^m]*Log[d + e*x] + 18*b*d^4*
m*Log[c*(d + e*x)^n] + 72*b*d^4*Log[f*x^m]*Log[c*(d + e*x)^n] + 18*b*e^4*n*
```

```
x^4*Log[x]*(m + 4*Log[f*x^m] + 4*m*Log[d + e*x] - 4*m*Log[1 + (e*x)/d]) - 7
2*b*e^4*m*n*x^4*PolyLog[2, -((e*x)/d)])/(288*d^4*x^4)
```

Maple [C] time = 0.89, size = 2387, normalized size = 10.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))/x^5,x)
```

```
[Out] -1/8*I/x^4*Pi*ln(c)*b*csgn(I*x^m)*csgn(I*f*x^m)^2+1/4*e^4*n*b*ln(x^m)/d^4*l
n(e*x+d)-1/4*e^3*n*b*ln(x^m)/d^3/x-1/4*b*ln(c)/x^4*ln(x^m)-1/16*b*Pi^2*csgn
(I*c*(e*x+d)^n)^3/x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/4/x^4*ln(f)*ln(c)*b-1/16/
x^4*ln(c)*b*m+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csg
n(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^
4*csgn(I*f*x^m)^3+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*x^
m)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*
csgn(I*f)*csgn(I*f*x^m)^2-1/4*a/x^4*ln(x^m)+1/16*I/d^2*b*e^2*n/x^2*Pi*csgn(
I*x^m)*csgn(I*f*x^m)^2-1/24*I/d*e*b*n/x^3*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/4/
x^4*ln(f)*a+(-1/4*b/x^4*ln(x^m)-1/16*(-2*I*Pi*b*csgn(I*f)*csgn(I*x^m)*csgn(
I*f*x^m)+2*I*Pi*b*csgn(I*f)*csgn(I*f*x^m)^2+2*I*Pi*b*csgn(I*x^m)*csgn(I*f*x
^m)^2-2*I*Pi*b*csgn(I*f*x^m)^3+4*b*ln(f)+b*m)/x^4)*ln((e*x+d)^n)-1/4*m*e^4*
b*n/d^4*ln(e*x+d)*ln(-e*x/d)-1/16/x^4*a*m+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c*(e*
x+d)^n)^3/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/32*I/x^4*Pi*b*m*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*f)*csgn(I*f*x^m)^2-1/16*b*Pi^2*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)/x^4*csgn(I*x^m)*csgn(I*f*x^m)^2-1/
16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*
f*x^m)+1/8*I/x^4*ln(f)*Pi*b*csgn(I*c*(e*x+d)^n)^3+1/8*I/x^4*Pi*ln(c)*b*csgn
(I*f*x^m)^3-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f*x^m)^3
+1/24*I/d*e*b*n/x^3*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/16*I/d^2*b*e^2
*n/x^2*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)+1/8*I/d^3*b*e^3*n/x*Pi*csgn(I
*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/8*I/d^4*e^4*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn
(I*x^m)*csgn(I*f*x^m)-1/8*I/x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-
1/8*I/x^4*ln(f)*Pi*b*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I/x^4*Pi*l
n(c)*b*csgn(I*f)*csgn(I*f*x^m)^2-1/32*I/x^4*Pi*b*m*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2-1/32*I/x^4*Pi*b*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I/d^3
*b*e^3*n/x*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/x^4*Pi*a*csgn(I*f)*csgn(I*f*x
^m)^2-1/8*I/x^4*Pi*a*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*I/d^3*b*e^3*n/x*Pi*csg
n(I*f*x^m)^3-1/8*I/d^4*e^4*b*n*ln(e*x+d)*Pi*csgn(I*f*x^m)^3-1/16*I/d^2*b*e^
2*n/x^2*Pi*csgn(I*f*x^m)^3+1/24*I/d*e*b*n/x^3*Pi*csgn(I*f*x^m)^3+1/8*I/d^4*
e^4*b*n*ln(x)*Pi*csgn(I*f*x^m)^3+1/8*I/x^4*Pi*a*csgn(I*f)*csgn(I*x^m)*csgn(
I*f*x^m)-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2/x^4*csgn(I*f)*
csgn(I*x^m)*csgn(I*f*x^m)+1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)/x^4*ln(x^m)+1/16*b*e^4*m*n*ln(e*x+d)/d^4+1/8/d^4*n*m*e^4*b*ln(x)^
2+1/8*I/x^4*ln(f)*Pi*b*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*
I/x^4*Pi*ln(c)*b*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/4*m*e^4*b*n/d^4*dilo
g(-e*x/d)+1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-1/
4/d^4*e^4*b*n*ln(x)*ln(f)+1/4/d^4*e^4*b*n*ln(e*x+d)*ln(f)-1/8*I/d^3*b*e^3*n
/x*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2+1/16*I/d^2*b*e^2*n/x^2*Pi*csgn(I*f)*csgn(
I*f*x^m)^2+1/8/d^2*b*e^2*n/x^2*ln(f)-1/12/d*e*b*n/x^3*ln(f)-1/4/d^3*b*e^3*n
/x*ln(f)-1/8*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2/x^4*ln(x^m)+1/8*I/d^4*e
^4*b*n*ln(e*x+d)*Pi*csgn(I*f)*csgn(I*f*x^m)^2+1/8*I/d^4*e^4*b*n*ln(e*x+d)*P
i*csgn(I*x^m)*csgn(I*f*x^m)^2+1/8*e^2*n*b*ln(x^m)/d^2/x^2-1/4*e^4*n*b*ln(x^
m)/d^4*ln(x)-1/12*e*n*b*ln(x^m)/d/x^3-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*
```

```
c*(e*x+d)^n)^2/x^4*csgn(I*f*x^m)^3+1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3/x^4*ln(
x^m)-1/16*b*e^4*m*n*ln(x)/d^4-1/24*I/d*e*b*n/x^3*Pi*csgn(I*x^m)*csgn(I*f*x^
m)^2-1/8*I/d^4*e^4*b*n*ln(x)*Pi*csgn(I*f)*csgn(I*f*x^m)^2-1/8*I/d^4*e^4*b*n
*ln(x)*Pi*csgn(I*x^m)*csgn(I*f*x^m)^2-1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c
*(e*x+d)^n)^2/x^4*ln(x^m)-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*x^m)
*csgn(I*f*x^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)/x^4*csgn(I*f)*csgn(I*x^m)*csgn(I*f*x^m)-7/144*b*e*m*n/d/x^3+3/32*b*e^2*m*
n/d^2/x^2-5/16*b*e^3*m*n/d^3/x+1/32*I/x^4*Pi*b*m*csgn(I*c*(e*x+d)^n)^3+1/16
*b*Pi^2*csgn(I*c*(e*x+d)^n)^3/x^4*csgn(I*f*x^m)^3+1/8*I/x^4*Pi*a*csgn(I*f*x
^m)^3
```

Maxima [A] time = 1.25757, size = 342, normalized size = 1.49

$$\frac{1}{288}\left(\frac{72\left(\log\left(\frac{ex}{d}+1\right)\log(x)+\mathrm{Li}_2\left(-\frac{ex}{d}\right)\right)be^4n}{d^4}+\frac{18\,be^4n\log(ex+d)}{d^4}-\frac{72\,be^4nx^4\log(ex+d)\log(x)-36\,be^4nx^4\log(x)^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="maxima")
```

```
[Out] 1/288*(72*(log(e*x/d + 1)*log(x) + dilog(-e*x/d))*b*e^4*n/d^4 + 18*b*e^4*n*
log(e*x + d)/d^4 - (72*b*e^4*n*x^4*log(e*x + d)*log(x) - 36*b*e^4*n*x^4*log
(x)^2 + 18*b*e^4*n*x^4*log(x) + 90*b*d*e^3*n*x^3 - 27*b*d^2*e^2*n*x^2 + 14*
b*d^3*e*n*x + 18*b*d^4*log((e*x + d)^n) + 18*b*d^4*log(c) + 18*a*d^4)/(d^4*
x^4))*m + 1/24*(b*e*n*(6*e^3*log(e*x + d)/d^4 - 6*e^3*log(x)/d^4 - (6*e^2*x
^2 - 3*d*e*x + 2*d^2)/(d^3*x^3)) - 6*b*log((e*x + d)^n*c)/x^4 - 6*a/x^4)*lo
g(f*x^m)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a\log\left(fx^m\right)}{x^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log(f*x^m) + a*log(f*x^m))/x^5, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))/x**5,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(fx^m\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))/x^5,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log(f*x^m)/x^5, x)
```

3.367 $\int x^2 \log\left(f x^m\right)\left(a+b \log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=705

$$-\frac{2bd^3mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3e^3}+\frac{11b^2d^3mn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{9e^3}+\frac{2b^2d^3mn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{3e^3}$$

```
[Out] (2*a*b*d^2*m*n*x)/(9*e^2) - (71*b^2*d^2*m*n^2*x)/(54*e^2) + (b*d^2*m*n*(6*a
 - 11*b*n)*x)/(9*e^2) + (19*b^2*d*m*n^2*x^2)/(54*e) - (2*b^2*m*n^2*x^3)/27
- (2*a*b*d^2*n*x*Log[f*x^m])/(3*e^2) + (11*b^2*d^2*n^2*x*Log[f*x^m])/(9*e^2
) - (5*b^2*d*n^2*x^2*Log[f*x^m])/(18*e) + (2*b^2*n^2*x^3*Log[f*x^m])/27 + (
23*b^2*d^3*m*n^2*Log[d + e*x])/(54*e^3) + (5*b^2*d^3*m*n^2*Log[-((e*x)/d)]*
Log[d + e*x])/(9*e^3) - (5*b^2*d^3*n^2*Log[f*x^m]*Log[d + e*x])/(9*e^3) + (
8*b^2*d^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/(9*e^3) + (2*b^2*d^3*m*n*Log[-(
(e*x)/d)]*Log[c*(d + e*x)^n])/(3*e^3) - (2*b^2*d^2*n*(d + e*x)*Log[f*x^m]*L
og[c*(d + e*x)^n])/(3*e^3) - (5*b*d*m*n*x^2*(a + b*Log[c*(d + e*x)^n]))/(18
*e) + (4*b*m*n*x^3*(a + b*Log[c*(d + e*x)^n]))/27 + (b*d*n*x^2*Log[f*x^m]*(
a + b*Log[c*(d + e*x)^n]))/(3*e) - (2*b*n*x^3*Log[f*x^m]*(a + b*Log[c*(d +
e*x)^n]))/9 - (d^3*m*(a + b*Log[c*(d + e*x)^n])^2)/(9*e^3) - (m*x^3*(a + b*
Log[c*(d + e*x)^n])^2)/9 - (d^3*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]
)^2)/(3*e^3) + (d^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/(3*e^3) + (x^3
*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/3 + (11*b^2*d^3*m*n^2*PolyLog[2,
1 + (e*x)/d])/(9*e^3) - (2*b*d^3*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2,
1 + (e*x)/d])/(3*e^3) + (2*b^2*d^3*m*n^2*PolyLog[3, 1 + (e*x)/d])/(3*e^3)
```

Rubi [A] time = 2.18908, antiderivative size = 902, normalized size of antiderivative = 1.28, number of steps used = 50, number of rules used = 22, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.846, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301, 2428, 2396, 2433, 2374, 6589, 6741, 6742, 2394, 2315, 2389, 2295, 2395, 2434, 2375, 2317}

$$\frac{b^2mn^2\log^2(d+ex)d^3}{9e^3}+\frac{b^2mn^2\log(x)\log^2(d+ex)d^3}{3e^3}-\frac{b^2n^2\log\left(fx^m\right)\log^2(d+ex)d^3}{3e^3}+\frac{b^2m\log(x)\log^2\left(c(d+ex)^n\right)d^3}{3e^3}\cdot$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (2*a*b*d^2*m*n*x)/(3*e^2) - (151*b^2*d^2*m*n^2*x)/(54*e^2) - (a*b*d*m*n*x^2
)/(6*e) + (7*b^2*d*m*n^2*x^2)/(27*e) + (2*a*b*m*n*x^3)/27 - (4*b^2*m*n^2*x^
3)/81 + (b^2*d*m*n^2*(d + e*x)^2)/(6*e^3) - (2*b^2*m*n^2*(d + e*x)^3)/(81*e
^3) + (11*a*b*d^3*m*n*Log[x])/(9*e^3) + (23*b^2*d^3*m*n^2*Log[x])/(54*e^3)
+ (2*b^2*d^2*n^2*x*Log[f*x^m])/e^2 - (b^2*d*n^2*(d + e*x)^2*Log[f*x^m])/(2*
e^3) + (2*b^2*n^2*(d + e*x)^3*Log[f*x^m])/(27*e^3) + (13*b^2*d^3*m*n^2*Log[
d + e*x])/(54*e^3) - (2*a*b*d^3*m*n*Log[-((e*x)/d)]*Log[d + e*x])/(3*e^3) +
 (b^2*d^3*m*n^2*Log[d + e*x]^2)/(9*e^3) + (b^2*d^3*m*n^2*Log[x]*Log[d + e*x
]^2)/(3*e^3) - (b^2*d^3*n^2*Log[f*x^m]*Log[d + e*x]^2)/(3*e^3) - (b^2*d*m*n
*x^2*Log[c*(d + e*x)^n])/(6*e) + (2*b^2*m*n*x^3*Log[c*(d + e*x)^n])/27 + (2
*b^2*d^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/(3*e^3) + (11*b^2*d^3*m*n*Log[-(
(e*x)/d)]*Log[c*(d + e*x)^n])/(9*e^3) - (2*b^2*d^3*m*n*Log[x]*Log[d + e*x]*
Log[c*(d + e*x)^n])/(3*e^3) + (b^2*d^3*m*Log[x]*Log[c*(d + e*x)^n]^2)/(3*e^
3) - (b^2*d^3*m*Log[-((e*x)/d)]*Log[c*(d + e*x)^n]^2)/(3*e^3) + (b*m*n*((18
*d^2*(d + e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*
Log[d + e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/27 - (b*n*Log[f*x^m]*((18*d^
2*(d + e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*Log
[d + e*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/9 - (m*x^3*(a + b*Log[c*(d + e*
x)^n])^2)/9 + (x^3*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/3 - (2*a*b*d^3*
```

```
m*n*PolyLog[2, 1 + (e*x)/d])/(3*e^3) + (11*b^2*d^3*m*n^2*PolyLog[2, 1 + (e*
x)/d])/(9*e^3) - (2*b^2*d^3*m*n*Log[c*(d + e*x)^n]*PolyLog[2, 1 + (e*x)/d])
/(3*e^3) + (2*b^2*d^3*m*n^2*PolyLog[3, 1 + (e*x)/d])/(3*e^3)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2428

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_)*((g_.)*(x_))^(q_.), x_Symbol] :> With[{u = IntHide[(g*x)^q*(a + b*
Log[c*(d + e*x)^n])^p, x]}, Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x,
u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, q}, x] && IGtQ[p, 1] &&
```

```
IGtQ[q, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x^2 \log\left(fx^m\right)(a+b\log(c(d+ex)^n))^2\,dx = \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} + \frac{2b^2n^2(d+ex)^3\log\left(fx^m\right)}{27e^3}$$

$$= -\frac{2b^2d^2mn^2x}{e^2} + \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} + \frac{2b^2n^2(d}{}$$

$$= -\frac{2b^2d^2mn^2x}{e^2} + \frac{2b^2d^2n^2x\log\left(fx^m\right)}{e^2} - \frac{b^2dn^2(d+ex)^2\log\left(fx^m\right)}{2e^3} + \frac{2b^2n^2(d}{}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} + \frac{2b^2d^2n^2}{}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} + \frac{2b^2d^2n^2}{}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} + \frac{2b^2d^2n^2}{}$$

$$= -\frac{11b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{23b^2d^3mn^2\log(x)}{54e^3} + \frac{2b^2d^2n^2}{}$$

$$= -\frac{17b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{b^2dmn^2(d+ex)^2}{6e^3} - \frac{2b^2mn^2(}{81}$$

$$= -\frac{17b^2d^2mn^2x}{9e^2} + \frac{5b^2dmn^2x^2}{36e} - \frac{2}{81}b^2mn^2x^3 + \frac{b^2dmn^2(d+ex)^2}{6e^3} - \frac{2b^2mn^2(}{81}$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{23b^2d^2mn^2x}{9e^2} - \frac{abdmnx^2}{6e} + \frac{5b^2dmn^2x^2}{36e} + \frac{2}{27}abmnx^3 - \frac{2}{81}b^2$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmnx^3 - \frac{4}{81}b$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmnx^3 - \frac{4}{81}b$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmnx^3 - \frac{4}{81}b$$

$$= \frac{2abd^2mnx}{3e^2} - \frac{151b^2d^2mn^2x}{54e^2} - \frac{abdmnx^2}{6e} + \frac{7b^2dmn^2x^2}{27e} + \frac{2}{27}abmnx^3 - \frac{4}{81}b$$

Mathematica [A] time = 1.60643, size = 735, normalized size = 1.04

$$\frac{bmn\left(-36d^3\text{PolyLog}\left(2,-\frac{ex}{d}\right) - 6\log(x)\left(ex\left(-6d^2+3dex-2e^2x^2\right)+6d^3\log\left(\frac{ex}{d}+1\right)+6e^3x^3\log(d+ex)\right) - 48d^2ex + 12}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] (6*b*n*(m*Log[x] - Log[f*x^m])*(e*x*(6*d^2 - 3*d*e*x + 2*e^2*x^2) - 6*(d^3
+ e^3*x^3)*Log[d + e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) + 18
*e^3*m*x^3*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 6*e^3*x
^3*(m + 3*m*Log[x] - 3*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x
)^n])^2 + b*m*n*(-a + b*n*Log[d + e*x] - b*Log[c*(d + e*x)^n])*(-48*d^2*e*x
 + 15*d*e^2*x^2 - 8*e^3*x^3 + 12*d^3*Log[d + e*x] + 12*e^3*x^3*Log[d + e*x]
 - 6*Log[x]*(e*x*(-6*d^2 + 3*d*e*x - 2*e^2*x^2) + 6*e^3*x^3*Log[d + e*x] +
6*d^3*Log[1 + (e*x)/d]) - 36*d^3*PolyLog[2, -((e*x)/d)]) - b^2*n^2*(137*d^2
*e*m*x - 19*d*e^2*m*x^2 + 4*e^3*m*x^3 + 36*d^3*m*Log[x] - 36*d^3*Log[f*x^m]
 - 66*d^2*e*x*Log[f*x^m] + 15*d*e^2*x^2*Log[f*x^m] - 4*e^3*x^3*Log[f*x^m] -
 71*d^3*m*Log[d + e*x] - 48*d^2*e*m*x*Log[d + e*x] + 15*d*e^2*m*x^2*Log[d +
 e*x] - 8*e^3*m*x^3*Log[d + e*x] - 66*d^3*m*Log[x]*Log[d + e*x] + 66*d^3*Lo
g[f*x^m]*Log[d + e*x] + 36*d^2*e*x*Log[f*x^m]*Log[d + e*x] - 18*d*e^2*x^2*L
og[f*x^m]*Log[d + e*x] + 12*e^3*x^3*Log[f*x^m]*Log[d + e*x] + 6*d^3*m*Log[d
 + e*x]^2 + 6*e^3*m*x^3*Log[d + e*x]^2 + 18*d^3*m*Log[-((e*x)/d)]*Log[d + e
*x]^2 - 18*d^3*Log[f*x^m]*Log[d + e*x]^2 - 18*e^3*x^3*Log[f*x^m]*Log[d + e*
x]^2 + 66*d^3*m*Log[x]*Log[1 + (e*x)/d] + 66*d^3*m*PolyLog[2, -((e*x)/d)] +
 36*d^3*m*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 36*d^3*m*PolyLog[3, 1 + (e
*x)/d]))/(54*e^3)
```

Maple [F] time = 1.685, size = 0, normalized size = 0.

$$\int x^2 \ln\left(f x^m\right)\left(a + b\ln\left(c\left(ex+d\right)^n\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(x^2*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{9}\left(b^2\left(m - 3\log\left(f\right)\right)x^3 - 3b^2x^3\log\left(x^m\right)\right)\log\left(\left(ex+d\right)^n\right)^2 + \int \frac{9\left(b^2e\log\left(c\right)^2\log\left(f\right) + 2abe\log\left(c\right)\log\left(f\right) + a^2e\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -1/9*(b^2*(m - 3*log(f))*x^3 - 3*b^2*x^3*log(x^m))*log((e*x + d)^n)^2 + int
egrate(1/9*(9*(b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f)
)*x^3 + 9*(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f))*x^
2 + 2*((9*a*b*e*log(f) + (9*e*log(c)*log(f) + (m*n - 3*n*log(f))*e)*b^2)*x^
3 + 9*(b^2*d*log(c)*log(f) + a*b*d*log(f))*x^2 - 3*(((e*n - 3*e*log(c))*b^2
 - 3*a*b*e)*x^3 - 3*(b^2*d*log(c) + a*b*d)*x^2)*log(x^m))*log((e*x + d)^n)
+ 9*((b^2*e*log(c)^2 + 2*a*b*e*log(c) + a^2*e)*x^3 + (b^2*d*log(c)^2 + 2*a*
b*d*log(c) + a^2*d)*x^2)*log(x^m))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b^2x^2\log\left(\left(ex+d\right)^n c\right)^2\log\left(fx^m\right) + 2\,abx^2\log\left(\left(ex+d\right)^n c\right)\log\left(fx^m\right) + a^2x^2\log\left(fx^m\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*x^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*x^2*log((e*x + d)^
n*c)*log(f*x^m) + a^2*x^2*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^2 x^2 \log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x^2*log(f*x^m), x)
```

3.368 $\int x \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=602

$$\frac{bd^2mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}-\frac{3b^2d^2mn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{2e^2}-\frac{b^2d^2mn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{e^2}+$$

```
[Out] -(a*b*d*m*n*x)/(2*e) + (2*b^2*d*m*n^2*x)/e - (2*b*d*m*n*(a - b*n)*x)/e - (b
^2*m*n^2*x^2)/8 - (b^2*m*n^2*(d + e*x)^2)/(4*e^2) - (b^2*d^2*m*n^2*Log[x])/
(4*e^2) + (2*a*b*d*n*x*Log[f*x^m])/e - (2*b^2*d*n^2*x*Log[f*x^m])/e + (b^2*
n^2*(d + e*x)^2*Log[f*x^m])/(4*e^2) - (5*b^2*d*m*n*(d + e*x)*Log[c*(d + e*x
)^n])/(2*e^2) - (2*b^2*d^2*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e^2 + (2
*b^2*d*n*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e^2 + (b*m*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (b*d^2*m*n*Log[-((e*x)/d)]*(a + b*Log
[c*(d + e*x)^n]))/(2*e^2) - (b*n*(d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e
*x)^n]))/(2*e^2) + (d*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (
m*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (d^2*m*Log[-((e*x)/d)
]*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (d*(d + e*x)*Log[f*x^m]*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^2 + ((d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n
])^2)/(2*e^2) - (3*b^2*d^2*m*n^2*PolyLog[2, 1 + (e*x)/d])/(2*e^2) + (b*d^2*
m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e^2 - (b^2*d^2*m*n^
2*PolyLog[3, 1 + (e*x)/d])/e^2
```

Rubi [A] time = 1.29313, antiderivative size = 602, normalized size of antiderivative = 1., number of steps used = 38, number of rules used = 16, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2428, 43, 2411, 2351, 2317, 2391, 2353, 2374, 6589}

$$\frac{bd^2mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e^2}-\frac{3b^2d^2mn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{2e^2}-\frac{b^2d^2mn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{e^2}+$$

Antiderivative was successfully verified.

```
[In] Int[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```


```
[Out] -(a*b*d*m*n*x)/(2*e) + (2*b^2*d*m*n^2*x)/e - (2*b*d*m*n*(a - b*n)*x)/e - (b
^2*m*n^2*x^2)/8 - (b^2*m*n^2*(d + e*x)^2)/(4*e^2) - (b^2*d^2*m*n^2*Log[x])/
(4*e^2) + (2*a*b*d*n*x*Log[f*x^m])/e - (2*b^2*d*n^2*x*Log[f*x^m])/e + (b^2*
n^2*(d + e*x)^2*Log[f*x^m])/(4*e^2) - (5*b^2*d*m*n*(d + e*x)*Log[c*(d + e*x
)^n])/(2*e^2) - (2*b^2*d^2*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e^2 + (2
*b^2*d*n*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e^2 + (b*m*n*(d + e*x)^2*
(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (b*d^2*m*n*Log[-((e*x)/d)]*(a + b*Log
[c*(d + e*x)^n]))/(2*e^2) - (b*n*(d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e
*x)^n]))/(2*e^2) + (d*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (
m*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (d^2*m*Log[-((e*x)/d)
]*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) - (d*(d + e*x)*Log[f*x^m]*(a + b*Lo
g[c*(d + e*x)^n])^2)/e^2 + ((d + e*x)^2*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n
])^2)/(2*e^2) - (3*b^2*d^2*m*n^2*PolyLog[2, 1 + (e*x)/d])/(2*e^2) + (b*d^2*
m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e^2 - (b^2*d^2*m*n^
2*PolyLog[3, 1 + (e*x)/d])/e^2
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
```

```
d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2428

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_)*((g_.)*(x_))^(q_.), x_Symbol] :> With[{u = IntHide[(g*x)^q*(a + b*
Log[c*(d + e*x)^n])^p, x]}, Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x,
u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, q}, x] && IGtQ[p, 1] &&
 IGtQ[q, 0]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
```

```
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x \log \left(f x^m\right) (a + b \log (c(d + ex)^n))^2 \, dx = \frac{2abdnx \log \left(f x^m\right)}{e} - \frac{2b^2dn^2x \log \left(f x^m\right)}{e} + \frac{b^2n^2(d + ex)^2 \log \left(f x^m\right)}{4e^2} + \frac{2b^2dn}{}$$

$$= -\frac{2bdmn(a - bn)x}{e} + \frac{2abdnx \log \left(f x^m\right)}{e} - \frac{2b^2dn^2x \log \left(f x^m\right)}{e} + \frac{b^2n^2(d + ex}{4}$$

$$= -\frac{2bdmn(a - bn)x}{e} + \frac{2abdnx \log \left(f x^m\right)}{e} - \frac{2b^2dn^2x \log \left(f x^m\right)}{e} + \frac{b^2n^2(d + ex}{4}$$

$$= -\frac{b^2dmn^2x}{2e} - \frac{2bdmn(a - bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2d^2mn^2 \log(x)}{4e^2} + \frac{2abdnx \log}{e}$$

$$= -\frac{b^2dmn^2x}{2e} - \frac{2bdmn(a - bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2d^2mn^2 \log(x)}{4e^2} + \frac{2abdnx \log}{e}$$

$$= \frac{abdmnx}{2e} + \frac{3b^2dmn^2x}{2e} - \frac{2bdmn(a - bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2mn^2(d + ex)^2}{8e^2} -$$

$$= -\frac{abdmnx}{2e} + \frac{b^2dmn^2x}{e} - \frac{2bdmn(a - bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2mn^2(d + ex)^2}{4e^2} -$$

$$= -\frac{abdmnx}{2e} + \frac{2b^2dmn^2x}{e} - \frac{2bdmn(a - bn)x}{e} - \frac{1}{8}b^2mn^2x^2 - \frac{b^2mn^2(d + ex)^2}{4e^2} -$$

Mathematica [F] time = 0.382877, size = 0, normalized size = 0.

$$\int x \log \left(f x^m\right) (a + b \log (c(d + ex)^n))^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] Integrate[x*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2, x]
```

Maple [F] time = 2.195, size = 0, normalized size = 0.

$$\int x \ln \left(f x^m\right) \left(a + b \ln \left(c (ex + d)^n\right)\right)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(x*ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{4} \left(b^2\left(m - 2 \log \left(f\right)\right)x^2 - 2 b^2x^2 \log \left(x^m\right)\right) \log \left((ex + d)^n\right)^2 + \int \frac{2 \left(b^2e \log (c)^2 \log \left(f\right) + 2 abe \log (c) \log \left(f\right) + a^2e \log \left(f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*(m - 2*log(f))*x^2 - 2*b^2*x^2*log(x^m))*log((e*x + d)^n)^2 + int
egrate(1/2*(2*(b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f)
)*x^2 + 2*(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f))*x
+ ((4*a*b*e*log(f) + (4*e*log(c)*log(f) + (m*n - 2*n*log(f))*e)*b^2)*x^2 +
4*(b^2*d*log(c)*log(f) + a*b*d*log(f))*x - 2*(((e*n - 2*e*log(c))*b^2 - 2*a
*b*e)*x^2 - 2*(b^2*d*log(c) + a*b*d)*x)*log(x^m))*log((e*x + d)^n) + 2*((b^
2*e*log(c)^2 + 2*a*b*e*log(c) + a^2*e)*x^2 + (b^2*d*log(c)^2 + 2*a*b*d*log(
c) + a^2*d)*x)*log(x^m))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(b^2x\log\left((ex+d)^nc\right)^2\log\left(fx^m\right)+2\,abx\log\left((ex+d)^nc\right)\log\left(fx^m\right)+a^2x\log\left(fx^m\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*x*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*x*log((e*x + d)^n*c)
*log(f*x^m) + a^2*x*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\log\left((ex+d)^nc\right)+a\right)^2x\log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*x*log(f*x^m), x)
```

3.369 $\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2\,dx$

Optimal. Leaf size=309

$$-\frac{2bdmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{e}+$$

```
[Out] 2*a*b*m*n*x - 4*b^2*m*n^2*x + 2*b*m*n*(a - b*n)*x - 2*a*b*n*x*Log[f*x^m] +
2*b^2*n^2*x*Log[f*x^m] + (4*b^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e + (2*b^
2*d*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e - (2*b^2*n*(d + e*x)*Log[f*x^
m]*Log[c*(d + e*x)^n])/e - (m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e - (
d*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/e + ((d + e*x)*Log[f*x^m]
*(a + b*Log[c*(d + e*x)^n])^2)/e + (2*b^2*d*m*n^2*PolyLog[2, 1 + (e*x)/d])/
e - (2*b*d*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e + (2*b
^2*d*m*n^2*PolyLog[3, 1 + (e*x)/d])/e
```

Rubi [A] time = 0.452542, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 12, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.522, Rules used = {2389, 2296, 2295, 2423, 2411, 43, 2351, 2317, 2391, 2353, 2374, 6589}

$$-\frac{2bdmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{e}+\frac{2b^2dmn^2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)}{e}+$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```


```
[Out] 2*a*b*m*n*x - 4*b^2*m*n^2*x + 2*b*m*n*(a - b*n)*x - 2*a*b*n*x*Log[f*x^m] +
2*b^2*n^2*x*Log[f*x^m] + (4*b^2*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e + (2*b^
2*d*m*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e - (2*b^2*n*(d + e*x)*Log[f*x^
m]*Log[c*(d + e*x)^n])/e - (m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e - (
d*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n])^2)/e + ((d + e*x)*Log[f*x^m]
*(a + b*Log[c*(d + e*x)^n])^2)/e + (2*b^2*d*m*n^2*PolyLog[2, 1 + (e*x)/d])/
e - (2*b*d*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e + (2*b
^2*d*m*n^2*PolyLog[3, 1 + (e*x)/d])/e
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2423

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_), x_Symbol] :> With[{u = IntHide[(a + b*Log[c*(d + e*x)^n])^p, x]},
```

```
Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a,
b, c, d, e, f, m, n}, x] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \log\left(fx^m\right)(a+b\log(c(d+ex)^n))^2\,dx = -2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx^m\right)\log(c(d+ex}{e}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx\right.}{e}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx\right.}{e}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx\right.}{e}$$

$$= 2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)-\frac{2b^2n(d+ex)\log\left(fx\right.}{e}$$

$$= -2b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)+\frac{2b^2mn}{}$$

$$= 2abmnx-2b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)$$

$$= 2abmnx-4b^2mn^2x+2bmn(a-bn)x-2abnx\log\left(fx^m\right)+2b^2n^2x\log\left(fx^m\right)$$

Mathematica [A] time = 0.473595, size = 549, normalized size = 1.78

$$-2bemn\left(\frac{x(\log(x)-1)}{e}-\frac{d\left(\frac{\text{PolyLog}\left(2,-\frac{ex}{d}\right)}{e}+\frac{\log(x)\log\left(\frac{d+ex}{d}\right)}{e}\right)}{e}\right)(a+b(\log(c(d+ex)^n)-n\log(d+ex)))+b^2mn^2\left(-2e\left(\frac{d\text{Po}}{}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] b^2*n^2*(-(m*Log[x]) + Log[f*x^m])*(x*Log[d + e*x]^2 - 2*e*(-(x/e) + (d*Log
[d + e*x])/e^2 + (x*Log[d + e*x])/e - (d*Log[d + e*x]^2)/(2*e^2))) - x*(m -
 Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - 2*b*n*x*(-m
- m*Log[x] + Log[f*x^m])*(a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])) +
 2*b*n*x*(-m + Log[f*x^m])*Log[d + e*x]*(a + b*(-(n*Log[d + e*x]) + Log[c*(
d + e*x)^n])) + (2*b*d*n*(-m - m*Log[x] + Log[f*x^m])*Log[d + e*x]*(a + b*(
-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])))/e - 2*b*e*m*n*(a + b*(-(n*Log[d +
 e*x]) + Log[c*(d + e*x)^n]))*((x*(-1 + Log[x]))/e - (d*((Log[x]*Log[(d + e
*x)/d])/e + PolyLog[2, -((e*x)/d)]/e))/e) + b^2*m*n^2*(-(x*Log[d + e*x]^2)
+ x*Log[x]*Log[d + e*x]^2 + 2*e*(-(x/e) + (d*Log[d + e*x])/e^2 + (x*Log[d +
 e*x])/e - (d*Log[d + e*x]^2)/(2*e^2)) - 2*e*((2*e*x - d*Log[d + e*x] - e*x
*Log[d + e*x] + Log[x]*(-(e*x) + e*x*Log[d + e*x] + d*Log[1 + (e*x)/d]) + d
*PolyLog[2, -((e*x)/d)])/e^2 - (d*(((Log[x] - Log[-((e*x)/d)])*Log[d + e*x]
^2)/2 - Log[d + e*x]*PolyLog[2, (d + e*x)/d] + PolyLog[3, (d + e*x)/d]))/e^
2))
```

Maple [F] time = 1.871, size = 0, normalized size = 0.

$$\int \ln\left(f x^{m}\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\left(b^{2}\left(m-\log\left(f\right)\right)x-b^{2}x\log\left(x^{m}\right)\right)\log\left(\left(ex+d\right)^{n}\right)^{2}+\int \frac{b^{2}d\log\left(c\right)^{2}\log\left(f\right)+2\,abd\log\left(c\right)\log\left(f\right)+a^{2}d\log\left(f\right)+\left(b^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(b^2*(m - log(f))*x - b^2*x*log(x^m))*log((e*x + d)^n)^2 + integrate((b^2*
d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f) + (b^2*e*log(c)^2*
log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f))*x + 2*(b^2*d*log(c)*log(f) +
 a*b*d*log(f) + (a*b*e*log(f) + (e*log(c)*log(f) + (m*n - n*log(f))*e)*b^2)
*x + (b^2*d*log(c) + a*b*d - ((e*n - e*log(c))*b^2 - a*b*e)*x)*log(x^m))*lo
g((e*x + d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2
 + 2*a*b*e*log(c) + a^2*e)*x)*log(x^m))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}\log\left(fx^{m}\right)+2\,ab\log\left(\left(ex+d\right)^{n}c\right)\log\left(fx^{m}\right)+a^{2}\log\left(fx^{m}\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*log
(f*x^m) + a^2*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^2 \log\left(fx^m\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m), x)
```

3.370 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x}\,dx$

Optimal. Leaf size=823

result too large to display

```
[Out] (m*Log[x]^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/2 + Log[x]*(-(
m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 2
*b*n*(-(m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + 2*
b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[x]^2*(Log[d + e*x
] - Log[1 + (e*x)/d]))/2 - Log[x]*PolyLog[2, -((e*x)/d)] + PolyLog[3, -((e*
x)/d)]) - b^2*n^2*(m*Log[x] - Log[f*x^m])*(Log[-((e*x)/d)]*Log[d + e*x]^2 +
 2*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d]) + (b^2
*m*n^2*(Log[-((e*x)/d)]^4 + 6*Log[-((e*x)/d)]^2*Log[-((e*x)/(d + e*x))]^2 -
 4*(Log[-((e*x)/d)] + Log[d/(d + e*x)])*Log[-((e*x)/(d + e*x))]^3 + Log[-((
e*x)/(d + e*x))]^4 + 6*Log[x]^2*Log[d + e*x]^2 + 4*(2*Log[-((e*x)/d)]^3 - 3
*Log[x]^2*Log[d + e*x])*Log[1 + (e*x)/d] + 6*(Log[x] - Log[-((e*x)/d)])*(Lo
g[x] + 3*Log[-((e*x)/d)])*Log[1 + (e*x)/d]^2 - 4*Log[-((e*x)/d)]^2*Log[-((e
*x)/(d + e*x))]*(Log[-((e*x)/d)] + 3*Log[1 + (e*x)/d]) + 12*(Log[-((e*x)/d)
]^2 - 2*Log[-((e*x)/d)]*(Log[-((e*x)/(d + e*x))] + Log[1 + (e*x)/d]) + 2*Lo
g[x]*(-Log[d + e*x] + Log[1 + (e*x)/d]))*PolyLog[2, -((e*x)/d)] - 12*Log[-(
(e*x)/(d + e*x))]^2*PolyLog[2, (e*x)/(d + e*x)] + 12*(Log[-((e*x)/d)] - Log
[-((e*x)/(d + e*x))])^2*PolyLog[2, 1 + (e*x)/d] + 24*(Log[x] - Log[-((e*x)/
d)])*Log[1 + (e*x)/d]*PolyLog[2, 1 + (e*x)/d] + 24*(Log[-((e*x)/(d + e*x))]
 + Log[d + e*x])*PolyLog[3, -((e*x)/d)] + 24*Log[-((e*x)/(d + e*x))]*PolyLo
g[3, (e*x)/(d + e*x)] + 24*(-Log[x] + Log[-((e*x)/(d + e*x))])*PolyLog[3, 1
 + (e*x)/d] - 24*(PolyLog[4, -((e*x)/d)] + PolyLog[4, (e*x)/(d + e*x)] - Po
lyLog[4, 1 + (e*x)/d])))/12
```

Rubi [F] time = 0.0659637, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\log\left(fx^m\right)(a+b\log\left(c(d+ex)^n\right))^2}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x,x]
```

```
[Out] (Log[f*x^m]^2*(a + b*Log[c*(d + e*x)^n])^2)/(2*m) - (b*e*n*Defer[Int][(Log[
f*x^m]^2*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x])/m
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)(a+b\log\left(c(d+ex)^n\right))^2}{x}\,dx=\frac{\log^2\left(fx^m\right)(a+b\log\left(c(d+ex)^n\right))^2}{2m}-\frac{(ben)\int \frac{\log^2\left(fx^m\right)(a+b\log(c(d+ex)^n))}{d+ex}\,dx}{m}$$

Mathematica [A] time = 0.386571, size = 823, normalized size = 1.

$$-b^2\left(m\log(x)-\log\left(fx^m\right)\right)\left(\log\left(-\frac{ex}{d}\right)\log^2(d+ex)+2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)\log(d+ex)-2\text{PolyLog}\left(3,\frac{ex}{d}+1\right)\right)n^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x,x]
```

```
[Out] (m*Log[x]^2*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/2 + Log[x]*(-(
m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + 2
*b*n*(-(m*Log[x]) + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n
])*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + 2*
b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*((Log[x]^2*(Log[d + e*x
] - Log[1 + (e*x)/d]))/2 - Log[x]*PolyLog[2, -((e*x)/d)] + PolyLog[3, -((e*
x)/d)]) - b^2*n^2*(m*Log[x] - Log[f*x^m])*(Log[-((e*x)/d)]*Log[d + e*x]^2 +
 2*Log[d + e*x]*PolyLog[2, 1 + (e*x)/d] - 2*PolyLog[3, 1 + (e*x)/d]) + (b^2
*m*n^2*(Log[-((e*x)/d)]^4 + 6*Log[-((e*x)/d)]^2*Log[-((e*x)/(d + e*x))]^2 -
 4*(Log[-((e*x)/d)] + Log[d/(d + e*x)])*Log[-((e*x)/(d + e*x))]^3 + Log[-((
e*x)/(d + e*x))]^4 + 6*Log[x]^2*Log[d + e*x]^2 + 4*(2*Log[-((e*x)/d)]^3 - 3
*Log[x]^2*Log[d + e*x])*Log[1 + (e*x)/d] + 6*(Log[x] - Log[-((e*x)/d)])*(Lo
g[x] + 3*Log[-((e*x)/d)])*Log[1 + (e*x)/d]^2 - 4*Log[-((e*x)/d)]^2*Log[-((e
*x)/(d + e*x))]*(Log[-((e*x)/d)] + 3*Log[1 + (e*x)/d]) + 12*(Log[-((e*x)/d)
]^2 - 2*Log[-((e*x)/d)]*(Log[-((e*x)/(d + e*x))] + Log[1 + (e*x)/d]) + 2*Lo
g[x]*(-Log[d + e*x] + Log[1 + (e*x)/d]))*PolyLog[2, -((e*x)/d)] - 12*Log[-(
(e*x)/(d + e*x))]^2*PolyLog[2, (e*x)/(d + e*x)] + 12*(Log[-((e*x)/d)] - Log
[-((e*x)/(d + e*x))])^2*PolyLog[2, 1 + (e*x)/d] + 24*(Log[x] - Log[-((e*x)/
d)])*Log[1 + (e*x)/d]*PolyLog[2, 1 + (e*x)/d] + 24*(Log[-((e*x)/(d + e*x))]
 + Log[d + e*x])*PolyLog[3, -((e*x)/d)] + 24*Log[-((e*x)/(d + e*x))]*PolyLo
g[3, (e*x)/(d + e*x)] + 24*(-Log[x] + Log[-((e*x)/(d + e*x))])*PolyLog[3, 1
 + (e*x)/d] - 24*(PolyLog[4, -((e*x)/d)] + PolyLog[4, (e*x)/(d + e*x)] - Po
lyLog[4, 1 + (e*x)/d])))/12
```

Maple [F] time = 1.754, size = 0, normalized size = 0.

$$\int \frac{\ln\left(f x^{m}\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{2}\left(b^{2}m\log\left(x\right)^{2}-2\,b^{2}\log\left(f\right)\log\left(x\right)-2\,b^{2}\log\left(x\right)\log\left(x^{m}\right)\right)\log\left(\left(ex+d\right)^{n}\right)^{2}-\int -\frac{b^{2}d\log\left(c\right)^{2}\log\left(f\right)+2\,abd\log\left(c\right)\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*m*log(x)^2 - 2*b^2*log(f)*log(x) - 2*b^2*log(x)*log(x^m))*log((e*
x + d)^n)^2 - integrate(-(b^2*d*log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a
^2*d*log(f) + (b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f)
)*x + (b^2*e*m*n*x*log(x)^2 - 2*b^2*e*n*x*log(f)*log(x) + 2*b^2*d*log(c)*lo
g(f) + 2*a*b*d*log(f) + 2*(b^2*e*log(c)*log(f) + a*b*e*log(f))*x - 2*(b^2*e
*n*x*log(x) - b^2*d*log(c) - a*b*d - (b^2*e*log(c) + a*b*e)*x)*log(x^m))*lo
```

```
g((e*x + d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2
 + 2*a*b*e*log(c) + a^2*e)*x)*log(x^m))/(e*x^2 + d*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2\log\left(fx^m\right)+2\,ab\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a^2\log\left(fx^m\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2\log\left(fx^m\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m)/x, x)
```

3.371 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^2}\,dx$

Optimal. Leaf size=607

$$\frac{bmn\left(ex\left(\log^2(x)-2\left(\text{PolyLog}\left(2,-\frac{ex}{d}\right)+\log(x)\log\left(\frac{ex}{d}+1\right)\right)\right)+2ex\log\left(-\frac{ex}{d}\right)-2(d+ex)\log(d+ex)-2d\log(x)\log(d}{dx}$$

```
[Out] -((b^2*e*m*n^2*Log[x]^2*Log[d + e*x])/d) + (2*b^2*e*m*n^2*Log[-((e*x)/d)]*L
og[d + e*x])/d + (2*b^2*e*n^2*Log[x]*Log[f*x^m]*Log[d + e*x])/d - (b^2*e*m*
n^2*Log[d + e*x]^2)/d - (b^2*m*n^2*Log[d + e*x]^2)/x + (b^2*e*m*n^2*Log[-((
e*x)/d)]*Log[d + e*x]^2)/d - (b^2*e*n^2*Log[f*x^m]*Log[d + e*x]^2)/d - (b^2
*n^2*Log[f*x^m]*Log[d + e*x]^2)/x - (2*b*n*(m*Log[x] - Log[f*x^m])*(e*x*Log
[-((e*x)/d)] - (d + e*x)*Log[d + e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d +
 e*x)^n]))/(d*x) - (m*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^
2)/x - ((m - m*Log[x] + Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*
x)^n])^2)/x + (b^2*e*m*n^2*Log[x]^2*Log[1 + (e*x)/d])/d - (2*b^2*e*n^2*Log[
x]*Log[f*x^m]*Log[1 + (e*x)/d])/d - (2*b^2*e*n^2*Log[f*x^m]*PolyLog[2, -((e
*x)/d)])/d + (b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(2*e*x*Lo
g[-((e*x)/d)] - 2*(d + e*x)*Log[d + e*x] - 2*d*Log[x]*Log[d + e*x] + e*x*(L
og[x]^2 - 2*(Log[x]*Log[1 + (e*x)/d] + PolyLog[2, -((e*x)/d)]))))/(d*x) + (
2*b^2*e*m*n^2*(1 + Log[d + e*x])*PolyLog[2, 1 + (e*x)/d])/d + (2*b^2*e*m*n^
2*PolyLog[3, -((e*x)/d)])/d - (2*b^2*e*m*n^2*PolyLog[3, 1 + (e*x)/d])/d
```

Rubi [F] time = 0.0289378, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2,x]
```

```
[Out] Defer[Int][(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2, x]
```

Rubi steps

$$\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^2}\,dx=\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^2}\,dx$$

Mathematica [A] time = 0.754481, size = 513, normalized size = 0.85

$$-bmn\left(-ex\left(\log^2(x)-2\left(\text{PolyLog}\left(2,-\frac{ex}{d}\right)+\log(x)\log\left(\frac{ex}{d}+1\right)\right)\right)-2ex\log\left(-\frac{ex}{d}\right)+2(d+ex)\log(d+ex)+2d\log(x)\log$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^2,x]
```

```
[Out] (2*b*n*(m*Log[x] - Log[f*x^m])*(-(e*x*Log[-((e*x)/d)]) + (d + e*x)*Log[d +
e*x])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - d*m*Log[x]*(a - b*n*L
```

```
og[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d*(-m + m*Log[x] - Log[f*x^m])*(a -
 b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 - b*m*n*(a - b*n*Log[d + e*x] +
 b*Log[c*(d + e*x)^n])*(-2*e*x*Log[-((e*x)/d)] + 2*(d + e*x)*Log[d + e*x] +
 2*d*Log[x]*Log[d + e*x] - e*x*(Log[x]^2 - 2*(Log[x]*Log[1 + (e*x)/d] + Pol
yLog[2, -((e*x)/d)]))) + b^2*n^2*(e*m*x*Log[x]^2*Log[d + e*x] + 2*e*m*x*Log
[-((e*x)/d)]*Log[d + e*x] - 2*e*m*x*Log[x]*Log[-((e*x)/d)]*Log[d + e*x] + 2
*e*x*Log[-((e*x)/d)]*Log[f*x^m]*Log[d + e*x] - d*m*Log[d + e*x]^2 - e*m*x*L
og[d + e*x]^2 + e*m*x*Log[-((e*x)/d)]*Log[d + e*x]^2 - d*Log[f*x^m]*Log[d +
 e*x]^2 - e*x*Log[f*x^m]*Log[d + e*x]^2 - e*m*x*Log[x]^2*Log[1 + (e*x)/d] -
 2*e*m*x*Log[x]*PolyLog[2, -((e*x)/d)] + 2*e*x*(m - m*Log[x] + Log[f*x^m] +
 m*Log[d + e*x])*PolyLog[2, 1 + (e*x)/d] + 2*e*m*x*PolyLog[3, -((e*x)/d)] -
 2*e*m*x*PolyLog[3, 1 + (e*x)/d]))/(d*x)
```

Maple [F] time = 1.373, size = 0, normalized size = 0.

$$\int \frac{\ln\left(f x^{m}\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^2,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(b^{2}\left(m+\log\left(f\right)\right)+b^{2}\log\left(x^{m}\right)\right)\log\left(\left(ex+d\right)^{n}\right)^{2}}{x}+\int \frac{b^{2}d\log\left(c\right)^{2}\log\left(f\right)+2\,abd\log\left(c\right)\log\left(f\right)+a^{2}d\log\left(f\right)+\left(b^{2}e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="maxima")
```

```
[Out] -(b^2*(m + log(f)) + b^2*log(x^m))*log((e*x + d)^n)^2/x + integrate((b^2*d*
log(c)^2*log(f) + 2*a*b*d*log(c)*log(f) + a^2*d*log(f) + (b^2*e*log(c)^2*lo
g(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f))*x + 2*(b^2*d*log(c)*log(f) + a
*b*d*log(f) + (a*b*e*log(f) + (e*log(c)*log(f) + (m*n + n*log(f))*e)*b^2)*x
 + (b^2*d*log(c) + a*b*d + ((e*n + e*log(c))*b^2 + a*b*e)*x)*log(x^m))*log(
(e*x + d)^n) + (b^2*d*log(c)^2 + 2*a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2 +
 2*a*b*e*log(c) + a^2*e)*x)*log(x^m))/(e*x^3 + d*x^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2}\log\left(\left(ex+d\right)^{n}c\right)^{2}\log\left(f x^{m}\right)+2\,ab\log\left(\left(ex+d\right)^{n}c\right)\log\left(f x^{m}\right)+a^{2}\log\left(f x^{m}\right)}{x^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2\log\left(fx^m\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m)/x^2, x)
```

3.372 $\int \frac{\log(fx^m)(a+b\log(c(d+ex)^n))^2}{x^3}\,dx$

Optimal. Leaf size=939

result too large to display

```
[Out] (b^2*e^2*m*n^2*Log[x])/d^2 - (b^2*e^2*m*n^2*Log[x]^2)/(2*d^2) + (b^2*e^2*m*
n^2*Log[-((e*x)/d)])/(2*d^2) + (b^2*e^2*n^2*Log[x]*Log[f*x^m])/d^2 - (3*b^2
*e^2*m*n^2*Log[d + e*x])/(2*d^2) - (3*b^2*e*m*n^2*Log[d + e*x])/(2*d*x) + (
b^2*e^2*m*n^2*Log[x]*Log[d + e*x])/d^2 + (b^2*e^2*m*n^2*Log[x]^2*Log[d + e*
x])/(2*d^2) - (b^2*e^2*m*n^2*Log[-((e*x)/d)]*Log[d + e*x])/(2*d^2) - (b^2*e
^2*n^2*Log[f*x^m]*Log[d + e*x])/d^2 - (b^2*e*n^2*Log[f*x^m]*Log[d + e*x])/(
d*x) - (b^2*e^2*n^2*Log[x]*Log[f*x^m]*Log[d + e*x])/d^2 + (b^2*e^2*m*n^2*Lo
g[d + e*x]^2)/(4*d^2) - (b^2*m*n^2*Log[d + e*x]^2)/(4*x^2) - (b^2*e^2*m*n^2
*Log[-((e*x)/d)]*Log[d + e*x]^2)/(2*d^2) + (b^2*e^2*n^2*Log[f*x^m]*Log[d +
e*x]^2)/(2*d^2) - (b^2*n^2*Log[f*x^m]*Log[d + e*x]^2)/(2*x^2) + (b*n*(m*Log
[x] - Log[f*x^m])*(e^2*x^2*Log[-((e*x)/d)] + (d + e*x)*(e*x + (d - e*x)*Log
[d + e*x]))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]))/(d^2*x^2) - (m*L
og[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(2*x^2) - ((m - 2*m*
Log[x] + 2*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2)/(4*
x^2) - (b^2*e^2*m*n^2*Log[x]*Log[1 + (e*x)/d])/d^2 - (b^2*e^2*m*n^2*Log[x]^
2*Log[1 + (e*x)/d])/(2*d^2) + (b^2*e^2*n^2*Log[x]*Log[f*x^m]*Log[1 + (e*x)/
d])/d^2 - (b^2*e^2*n^2*(m - Log[f*x^m])*PolyLog[2, -((e*x)/d)])/d^2 - (b*m*
n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*x*(d + e*x) + e^2*x^2*Lo
g[-((e*x)/d)] + (d^2 - e^2*x^2)*Log[d + e*x] + 2*d^2*Log[x]*Log[d + e*x] +
e*x*(e*x*Log[x]^2 + 2*d*(1 + Log[x]) - 2*e*x*(Log[x]*Log[1 + (e*x)/d] + Pol
yLog[2, -((e*x)/d)]))))/(2*d^2*x^2) - (b^2*e^2*m*n^2*(1 + 2*Log[d + e*x])*P
olyLog[2, 1 + (e*x)/d])/(2*d^2) - (b^2*e^2*m*n^2*PolyLog[3, -((e*x)/d)])/d^
2 + (b^2*e^2*m*n^2*PolyLog[3, 1 + (e*x)/d])/d^2
```

Rubi [F] time = 0.0295654, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3,x]
```

```
[Out] Defer[Int][(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3, x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx=\int \frac{\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{x^3}\,dx$$

Mathematica [A] time = 1.17526, size = 781, normalized size = 0.83

$$-2bmn\left(ex\left(-2ex\left(\text{PolyLog}\left(2,-\frac{ex}{d}\right)+\log(x)\log\left(\frac{ex}{d}+1\right)\right)+2d(\log(x)+1)+ex\log^2(x)\right)+\left(d^2-e^2x^2\right)\log(d+ex)+$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/x^3,x]
```

```
[Out] (4*b*n*(m*Log[x] - Log[f*x^m])*(e^2*x^2*Log[-((e*x)/d)] + (d + e*x)*(e*x +
(d - e*x)*Log[d + e*x]))*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n]) - 2*
d^2*m*Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 + d^2*(-m + 2*
m*Log[x] - 2*Log[f*x^m])*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])^2 -
2*b*m*n*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(e*x*(d + e*x) + e^2*
x^2*Log[-((e*x)/d)] + (d^2 - e^2*x^2)*Log[d + e*x] + 2*d^2*Log[x]*Log[d + e
*x] + e*x*(e*x*Log[x]^2 + 2*d*(1 + Log[x]) - 2*e*x*(Log[x]*Log[1 + (e*x)/d]
 + PolyLog[2, -((e*x)/d)]))) + b^2*n^2*(4*e^2*m*x^2*Log[x] - 2*e^2*m*x^2*Lo
g[x]^2 + 2*e^2*m*x^2*Log[-((e*x)/d)] + 4*e^2*x^2*Log[x]*Log[f*x^m] - 6*d*e*
m*x*Log[d + e*x] - 6*e^2*m*x^2*Log[d + e*x] + 4*e^2*m*x^2*Log[x]*Log[d + e*
x] - 2*e^2*m*x^2*Log[x]^2*Log[d + e*x] - 2*e^2*m*x^2*Log[-((e*x)/d)]*Log[d
+ e*x] + 4*e^2*m*x^2*Log[x]*Log[-((e*x)/d)]*Log[d + e*x] - 4*d*e*x*Log[f*x^
m]*Log[d + e*x] - 4*e^2*x^2*Log[f*x^m]*Log[d + e*x] - 4*e^2*x^2*Log[-((e*x)
/d)]*Log[f*x^m]*Log[d + e*x] - d^2*m*Log[d + e*x]^2 + e^2*m*x^2*Log[d + e*x
]^2 - 2*e^2*m*x^2*Log[-((e*x)/d)]*Log[d + e*x]^2 - 2*d^2*Log[f*x^m]*Log[d +
 e*x]^2 + 2*e^2*x^2*Log[f*x^m]*Log[d + e*x]^2 - 4*e^2*m*x^2*Log[x]*Log[1 +
(e*x)/d] + 2*e^2*m*x^2*Log[x]^2*Log[1 + (e*x)/d] + 4*e^2*m*x^2*(-1 + Log[x]
)*PolyLog[2, -((e*x)/d)] - 2*e^2*x^2*(m - 2*m*Log[x] + 2*Log[f*x^m] + 2*m*L
og[d + e*x])*PolyLog[2, 1 + (e*x)/d] - 4*e^2*m*x^2*PolyLog[3, -((e*x)/d)] +
 4*e^2*m*x^2*PolyLog[3, 1 + (e*x)/d]))/(4*d^2*x^2)
```

Maple [F] time = 1.454, size = 0, normalized size = 0.

$$\int \frac{\ln\left(f x^{m}\right)\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^3,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^2/x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(b^{2}\left(m+2\,\log\left(f\right)\right)+2\,b^{2}\log\left(x^{m}\right)\right)\log\left(\left(ex+d\right)^{n}\right)^{2}}{4\,x^{2}}+\int \frac{2\,b^{2}d\log\left(c\right)^{2}\log\left(f\right)+4\,abd\log\left(c\right)\log\left(f\right)+2\,a^{2}d\log\left(f\right)+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*(m + 2*log(f)) + 2*b^2*log(x^m))*log((e*x + d)^n)^2/x^2 + integra
te(1/2*(2*b^2*d*log(c)^2*log(f) + 4*a*b*d*log(c)*log(f) + 2*a^2*d*log(f) +
2*(b^2*e*log(c)^2*log(f) + 2*a*b*e*log(c)*log(f) + a^2*e*log(f))*x + (4*b^2
*d*log(c)*log(f) + 4*a*b*d*log(f) + (4*a*b*e*log(f) + (4*e*log(c)*log(f) +
(m*n + 2*n*log(f))*e)*b^2)*x + 2*(2*b^2*d*log(c) + 2*a*b*d + ((e*n + 2*e*lo
g(c))*b^2 + 2*a*b*e)*x)*log(x^m))*log((e*x + d)^n) + 2*(b^2*d*log(c)^2 + 2*
a*b*d*log(c) + a^2*d + (b^2*e*log(c)^2 + 2*a*b*e*log(c) + a^2*e)*x)*log(x^m
```

```
))/(e*x^4 + d*x^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left((ex+d)^n c\right)^2\log\left(fx^m\right)+2\,ab\log\left((ex+d)^n c\right)\log\left(fx^m\right)+a^2\log\left(fx^m\right)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="fricas")
```

```
[Out] integral((b^2*log((e*x + d)^n*c)^2*log(f*x^m) + 2*a*b*log((e*x + d)^n*c)*lo
g(f*x^m) + a^2*log(f*x^m))/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**2/x**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2\log\left(fx^m\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^2/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*log(f*x^m)/x^3, x)
```

3.373 $\int \log \left(f x^m\right) (a + b \log (c(d + ex)^n))^3 \, dx$

Optimal. Leaf size=522

$$\frac{6b^2dmn^2\text{PolyLog}\left(2, \frac{ex}{d}+1\right)(a + b\log(c(d + ex)^n))}{e} + \frac{6b^2dmn^2\text{PolyLog}\left(3, \frac{ex}{d}+1\right)(a + b\log(c(d + ex)^n))}{e} - \frac{3bdmn\text{Po}}{}$$

```
[Out] -12*a*b^2*m*n^2*x + 18*b^3*m*n^3*x - 6*b^2*m*n^2*(a - b*n)*x + 6*a*b^2*n^2*
x*Log[f*x^m] - 6*b^3*n^3*x*Log[f*x^m] - (18*b^3*m*n^2*(d + e*x)*Log[c*(d +
e*x)^n])/e - (6*b^3*d*m*n^2*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e + (6*b^3*
n^2*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e + (6*b*m*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e + (3*b*d*m*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x
)^n])^2)/e - (3*b*n*(d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/e -
(m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e - (d*m*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n])^3)/e + ((d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])
^3)/e - (6*b^3*d*m*n^3*PolyLog[2, 1 + (e*x)/d])/e + (6*b^2*d*m*n^2*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e - (3*b*d*m*n*(a + b*Log[c*(d
+ e*x)^n])^2*PolyLog[2, 1 + (e*x)/d])/e - (6*b^3*d*m*n^3*PolyLog[3, 1 + (e*
x)/d])/e + (6*b^2*d*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, 1 + (e*x)/d
])/e - (6*b^3*d*m*n^3*PolyLog[4, 1 + (e*x)/d])/e
```

Rubi [A] time = 0.857952, antiderivative size = 522, normalized size of antiderivative = 1., number of steps used = 28, number of rules used = 13, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.565, Rules used = {2389, 2296, 2295, 2423, 2411, 43, 2351, 2317, 2391, 2353, 2374, 6589, 2383}

$$\frac{6b^2dmn^2\text{PolyLog}\left(2, \frac{ex}{d}+1\right)(a + b\log(c(d + ex)^n))}{e} + \frac{6b^2dmn^2\text{PolyLog}\left(3, \frac{ex}{d}+1\right)(a + b\log(c(d + ex)^n))}{e} - \frac{3bdmn\text{Po}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3,x]
```



```
[Out] -12*a*b^2*m*n^2*x + 18*b^3*m*n^3*x - 6*b^2*m*n^2*(a - b*n)*x + 6*a*b^2*n^2*
x*Log[f*x^m] - 6*b^3*n^3*x*Log[f*x^m] - (18*b^3*m*n^2*(d + e*x)*Log[c*(d +
e*x)^n])/e - (6*b^3*d*m*n^2*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/e + (6*b^3*
n^2*(d + e*x)*Log[f*x^m]*Log[c*(d + e*x)^n])/e + (6*b*m*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e + (3*b*d*m*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x
)^n])^2)/e - (3*b*n*(d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^2)/e -
(m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e - (d*m*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n])^3)/e + ((d + e*x)*Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])
^3)/e - (6*b^3*d*m*n^3*PolyLog[2, 1 + (e*x)/d])/e + (6*b^2*d*m*n^2*(a + b*L
og[c*(d + e*x)^n])*PolyLog[2, 1 + (e*x)/d])/e - (3*b*d*m*n*(a + b*Log[c*(d
+ e*x)^n])^2*PolyLog[2, 1 + (e*x)/d])/e - (6*b^3*d*m*n^3*PolyLog[3, 1 + (e*
x)/d])/e + (6*b^2*d*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, 1 + (e*x)/d
])/e - (6*b^3*d*m*n^3*PolyLog[4, 1 + (e*x)/d])/e
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2423

```
Int[Log[(f_.)*(x_)^(m_.)]*((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_
.))^(p_), x_Symbol] :> With[{u = IntHide[(a + b*Log[c*(d + e*x)^n])^p, x]},
 Dist[Log[f*x^m], u, x] - Dist[m, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a,
 b, c, d, e, f, m, n}, x] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2351

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*
(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[a + b*Log[c*x^n],
 (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e,
 f, m, n, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[m] && Integer
Q[r]))
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2353

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) +
(e_.)*(x_)^(r_.))^(q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[
c*x^n])^p, (f*x)^m*(d + e*x^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b
, c, d, e, f, m, n, p, q, r}, x] && IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0
] && IntegerQ[m] && IntegerQ[r]))
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rubi steps

$$\int \log\left(fx^m\right)(a+b\log(c(d+ex)^n))^3\,dx = 6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b^3n^2(d+ex)\log\left(fx^m\right)\log(c(d+e}{e}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b^3n^2(d+ex)}{}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b^3n^2(d+ex)}{}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b^3n^2(d+ex)}{}$$

$$= -6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)+\frac{6b^3n^2(d+ex)}{}$$

$$= 6b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log\left(fx^m\right)-\frac{6b^3n}{}$$

$$= -6ab^2mn^2x+6b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x\log$$

$$= -12ab^2mn^2x+12b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x$$

$$= -12ab^2mn^2x+18b^3mn^3x-6b^2mn^2(a-bn)x+6ab^2n^2x\log\left(fx^m\right)-6b^3n^3x$$

Mathematica [F] time = 0.486366, size = 0, normalized size = 0.

$$\int \log\left(fx^m\right)(a+b\log(c(d+ex)^n))^3\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3,x]
```

```
[Out] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^3, x]
```

Maple [F] time = 2.416, size = 0, normalized size = 0.

$$\int \ln \left(f x^m\right) \left(a + b \ln \left(c (ex + d)^n\right)\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^3,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\left(b^3\left(m - \log\left(f\right)\right)x - b^3 x \log\left(x^m\right)\right) \log\left((ex+d)^n\right)^3 + \int \frac{b^3 d \log(c)^3 \log\left(f\right) + 3\,ab^2 d \log(c)^2 \log\left(f\right) + 3\,a^2 bd \log(c) \mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="maxima")
```

```
[Out] -(b^3*(m - log(f))*x - b^3*x*log(x^m))*log((e*x + d)^n)^3 + integrate((b^3*
d*log(c)^3*log(f) + 3*a*b^2*d*log(c)^2*log(f) + 3*a^2*b*d*log(c)*log(f) + a
^3*d*log(f) + 3*(b^3*d*log(c)*log(f) + a*b^2*d*log(f) + (a*b^2*e*log(f) + (
e*log(c)*log(f) + (m*n - n*log(f))*e)*b^3)*x + (b^3*d*log(c) + a*b^2*d - ((
e*n - e*log(c))*b^3 - a*b^2*e)*x)*log(x^m))*log((e*x + d)^n)^2 + (b^3*e*log
(c)^3*log(f) + 3*a*b^2*e*log(c)^2*log(f) + 3*a^2*b*e*log(c)*log(f) + a^3*e*
log(f))*x + 3*(b^3*d*log(c)^2*log(f) + 2*a*b^2*d*log(c)*log(f) + a^2*b*d*lo
g(f) + (b^3*e*log(c)^2*log(f) + 2*a*b^2*e*log(c)*log(f) + a^2*b*e*log(f))*x
 + (b^3*d*log(c)^2 + 2*a*b^2*d*log(c) + a^2*b*d + (b^3*e*log(c)^2 + 2*a*b^2
*e*log(c) + a^2*b*e)*x)*log(x^m))*log((e*x + d)^n) + (b^3*d*log(c)^3 + 3*a*
b^2*d*log(c)^2 + 3*a^2*b*d*log(c) + a^3*d + (b^3*e*log(c)^3 + 3*a*b^2*e*log
(c)^2 + 3*a^2*b*e*log(c) + a^3*e)*x)*log(x^m))/(e*x + d), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b^3 \log\left((ex+d)^n c\right)^3 \log\left(f x^m\right) + 3\,ab^2 \log\left((ex+d)^n c\right)^2 \log\left(f x^m\right) + 3\,a^2 b \log\left((ex+d)^n c\right) \log\left(f x^m\right) + a^3 \mathrm{lo}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="fricas")
```

```
[Out] integral(b^3*log((e*x + d)^n*c)^3*log(f*x^m) + 3*a*b^2*log((e*x + d)^n*c)^2
*log(f*x^m) + 3*a^2*b*log((e*x + d)^n*c)*log(f*x^m) + a^3*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left((ex+d)^n c\right) + a\right)^3 \log \left(f x^m\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^3,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*log(f*x^m), x)
```

3.374 $\int \frac{\log(x)\log^2(a+bx)}{x}\,dx$

Optimal. Leaf size=519

$$\frac{1}{12}\left(-24\left(\text{PolyLog}\left(4,-\frac{bx}{a}\right)+\text{PolyLog}\left(4,\frac{bx}{a+bx}\right)-\text{PolyLog}\left(4,\frac{bx}{a}+1\right)\right)+12\left(\log^2\left(-\frac{bx}{a}\right)-2\left(\log\left(-\frac{bx}{a+bx}\right)+\right.\right.\right.$$

```
[Out] (Log[-((b*x)/a)]^4 + 6*Log[-((b*x)/a)]^2*Log[-((b*x)/(a + b*x))]^2 - 4*(Log
[-((b*x)/a)] + Log[a/(a + b*x)])*Log[-((b*x)/(a + b*x))]^3 + Log[-((b*x)/(a
 + b*x))]^4 + 6*Log[x]^2*Log[a + b*x]^2 + 4*(2*Log[-((b*x)/a)]^3 - 3*Log[x]
^2*Log[a + b*x])*Log[1 + (b*x)/a] + 6*(Log[x] - Log[-((b*x)/a)])*(Log[x] +
3*Log[-((b*x)/a)])*Log[1 + (b*x)/a]^2 - 4*Log[-((b*x)/a)]^2*Log[-((b*x)/(a
+ b*x))]*(Log[-((b*x)/a)] + 3*Log[1 + (b*x)/a]) + 12*(Log[-((b*x)/a)]^2 - 2
*Log[-((b*x)/a)]*(Log[-((b*x)/(a + b*x))] + Log[1 + (b*x)/a]) + 2*Log[x]*(-
Log[a + b*x] + Log[1 + (b*x)/a]))*PolyLog[2, -((b*x)/a)] - 12*Log[-((b*x)/(
a + b*x))]^2*PolyLog[2, (b*x)/(a + b*x)] + 12*(Log[-((b*x)/a)] - Log[-((b*x
)/(a + b*x))])^2*PolyLog[2, 1 + (b*x)/a] + 24*(Log[x] - Log[-((b*x)/a)])*Lo
g[1 + (b*x)/a]*PolyLog[2, 1 + (b*x)/a] + 24*(Log[-((b*x)/(a + b*x))] + Log[
a + b*x])*PolyLog[3, -((b*x)/a)] + 24*Log[-((b*x)/(a + b*x))]*PolyLog[3, (b
*x)/(a + b*x)] + 24*(-Log[x] + Log[-((b*x)/(a + b*x))])*PolyLog[3, 1 + (b*x
)/a] - 24*(PolyLog[4, -((b*x)/a)] + PolyLog[4, (b*x)/(a + b*x)] - PolyLog[4
, 1 + (b*x)/a]))/12
```

Rubi [F] time = 0.048933, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{\log(x)\log^2(a+bx)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Log[x]*Log[a + b*x]^2)/x,x]
```

```
[Out] (Log[x]^2*Log[a + b*x]^2)/2 - b*Defer[Int][(Log[x]^2*Log[a + b*x])/(a + b*x
), x]
```

Rubi steps

$$\int \frac{\log(x)\log^2(a+bx)}{x}\,dx = \frac{1}{2}\log^2(x)\log^2(a+bx) - b\int \frac{\log^2(x)\log(a+bx)}{a+bx}\,dx$$

Mathematica [A] time = 0.0948574, size = 519, normalized size = 1.

$$\frac{1}{12}\left(-24\left(\text{PolyLog}\left(4,-\frac{bx}{a}\right)+\text{PolyLog}\left(4,\frac{bx}{a+bx}\right)-\text{PolyLog}\left(4,\frac{bx}{a}+1\right)\right)+12\left(\log^2\left(-\frac{bx}{a}\right)-2\left(\log\left(-\frac{bx}{a+bx}\right)+\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[x]*Log[a + b*x]^2)/x,x]
```

```
[Out] (Log[-((b*x)/a)]^4 + 6*Log[-((b*x)/a)]^2*Log[-((b*x)/(a + b*x))]^2 - 4*(Log
[-((b*x)/a)] + Log[a/(a + b*x)])*Log[-((b*x)/(a + b*x))]^3 + Log[-((b*x)/(a
```

```
 + b*x))]^4 + 6*Log[x]^2*Log[a + b*x]^2 + 4*(2*Log[-((b*x)/a)]^3 - 3*Log[x]
^2*Log[a + b*x])*Log[1 + (b*x)/a] + 6*(Log[x] - Log[-((b*x)/a)])*(Log[x] +
3*Log[-((b*x)/a)])*Log[1 + (b*x)/a]^2 - 4*Log[-((b*x)/a)]^2*Log[-((b*x)/(a
+ b*x))]*(Log[-((b*x)/a)] + 3*Log[1 + (b*x)/a]) + 12*(Log[-((b*x)/a)]^2 - 2
*Log[-((b*x)/a)]*(Log[-((b*x)/(a + b*x))] + Log[1 + (b*x)/a]) + 2*Log[x]*(-
Log[a + b*x] + Log[1 + (b*x)/a]))*PolyLog[2, -((b*x)/a)] - 12*Log[-((b*x)/(
a + b*x))]^2*PolyLog[2, (b*x)/(a + b*x)] + 12*(Log[-((b*x)/a)] - Log[-((b*x
)/(a + b*x))])^2*PolyLog[2, 1 + (b*x)/a] + 24*(Log[x] - Log[-((b*x)/a)])*Lo
g[1 + (b*x)/a]*PolyLog[2, 1 + (b*x)/a] + 24*(Log[-((b*x)/(a + b*x))] + Log[
a + b*x])*PolyLog[3, -((b*x)/a)] + 24*Log[-((b*x)/(a + b*x))]*PolyLog[3, (b
*x)/(a + b*x)] + 24*(-Log[x] + Log[-((b*x)/(a + b*x))])*PolyLog[3, 1 + (b*x
)/a] - 24*(PolyLog[4, -((b*x)/a)] + PolyLog[4, (b*x)/(a + b*x)] - PolyLog[4
, 1 + (b*x)/a]))/12
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int \frac{\ln(x)(\ln(bx+a))^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(x)/x*ln(b*x+a)^2,x)
```

```
[Out] int(ln(x)/x*ln(b*x+a)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\log(bx+a)^2\log(x)^2 - b\int \frac{\log(bx+a)\log(x)^2}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="maxima")
```

```
[Out] 1/2*log(b*x + a)^2*log(x)^2 - b*integrate(log(b*x + a)*log(x)^2/(b*x + a),
x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\log(bx+a)^2\log(x)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="fricas")
```

```
[Out] integral(log(b*x + a)^2*log(x)/x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-b\int \frac{\log(x)^2\log(a+bx)}{a+bx}\,dx + \frac{\log(x)^2\log(a+bx)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(x)*ln(b*x+a)**2/x,x)
```

```
[Out] -b*Integral(log(x)**2*log(a + b*x)/(a + b*x), x) + log(x)**2*log(a + b*x)**
2/2
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(bx+a)^2\log(x)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(x)*log(b*x+a)^2/x,x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)^2*log(x)/x, x)
```

3.375 $\int \frac{\log(fx^m)}{a+b\log(c(d+ex)^n)}\,dx$

Optimal. Leaf size=25

$$\text{Unintegrable}\left(\frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)},x\right)$$

```
[Out] Unintegrable[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi [A] time = 0.0112972, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Defer[Int][Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

Rubi steps

$$\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx=\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Mathematica [A] time = 0.0419448, size = 0, normalized size = 0.

$$\int \frac{\log\left(fx^m\right)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]),x]
```

```
[Out] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n]), x]
```

Maple [A] time = 2.376, size = 0, normalized size = 0.

$$\int \frac{\ln\left(fx^m\right)}{a+b\ln\left(c\,(ex+d)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n)),x)
```

```
[Out] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(fx^m)}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="maxima")
```

```
[Out] integrate(log(f*x^m)/(b*log((e*x + d)^n*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(fx^m)}{b\log\left((ex+d)^n c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="fricas")
```

```
[Out] integral(log(f*x^m)/(b*log((e*x + d)^n*c) + a), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(fx^m)}{a+b\log\left(c(d+ex)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)/(a+b*ln(c*(e*x+d)**n)),x)
```

```
[Out] Integral(log(f*x**m)/(a + b*log(c*(d + e*x)**n)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(fx^m)}{b\log\left((ex+d)^n c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n)),x, algorithm="giac")
```

```
[Out] integrate(log(f*x^m)/(b*log((e*x + d)^n*c) + a), x)
```

3.376 $\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2} dx$

Optimal. Leaf size=25

$$\text{Unintegrable}\left(\frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2}, x\right)$$

```
[Out] Unintegrable[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Rubi [A] time = 0.0108033, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] Defer[Int][Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Rubi steps

$$\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2} dx = \int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2} dx$$

Mathematica [A] time = 0.462445, size = 0, normalized size = 0.

$$\int \frac{\log(fx^m)}{(a+b\log(c(d+ex)^n))^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2,x]
```

```
[Out] Integrate[Log[f*x^m]/(a + b*Log[c*(d + e*x)^n])^2, x]
```

Maple [A] time = 10.89, size = 0, normalized size = 0.

$$\int \frac{\ln(fx^m)}{\left(a+b\ln\left(c(ex+d)^n\right)\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

```
[Out] int(ln(f*x^m)/(a+b*ln(c*(e*x+d)^n))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{ex\log\left(f\right)+d\log\left(f\right)+(ex+d)\log\left(x^m\right)}{b^2en\log\left((ex+d)^n\right)+b^2en\log\left(c\right)+aben}+\int\frac{e\left(m+\log\left(f\right)\right)x+ex\log\left(x^m\right)+dm}{b^2enx\log\left((ex+d)^n\right)+\left(b^2en\log\left(c\right)+aben\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="maxima")
```

```
[Out] -(e*x*log(f) + d*log(f) + (e*x + d)*log(x^m))/(b^2*e*n*log((e*x + d)^n) + b
^2*e*n*log(c) + a*b*e*n) + integrate((e*(m + log(f))*x + e*x*log(x^m) + d*m
)/(b^2*e*n*x*log((e*x + d)^n) + (b^2*e*n*log(c) + a*b*e*n)*x), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log\left(fx^m\right)}{b^2\log\left((ex+d)^nc\right)^2+2\,ab\log\left((ex+d)^nc\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="fricas")
```

```
[Out] integral(log(f*x^m)/(b^2*log((e*x + d)^n*c)^2 + 2*a*b*log((e*x + d)^n*c) +
a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)/(a+b*ln(c*(e*x+d)**n))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log\left(fx^m\right)}{\left(b\log\left((ex+d)^nc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)/(a+b*log(c*(e*x+d)^n))^2,x, algorithm="giac")
```

```
[Out] integrate(log(f*x^m)/(b*log((e*x + d)^n*c) + a)^2, x)
```

3.377 $\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$

Optimal. Leaf size=25

$$\text{Unintegrable}\left(\log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p,x\right)$$

```
[Out] Unintegrable[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

Rubi [A] time = 0.0101469, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] Defer[Int][Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

Rubi steps

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx=\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Mathematica [A] time = 0.0901825, size = 0, normalized size = 0.

$$\int \log\left(fx^m\right)\left(a+b\log\left(c(d+ex)^n\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p,x]
```

```
[Out] Integrate[Log[f*x^m]*(a + b*Log[c*(d + e*x)^n])^p, x]
```

Maple [A] time = 0.952, size = 0, normalized size = 0.

$$\int \ln\left(fx^m\right)\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^p,x)
```

```
[Out] int(ln(f*x^m)*(a+b*ln(c*(e*x+d)^n))^p,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b\log\left((ex+d)^n c\right)+a\right)^p \log\left(fx^m\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c) + a)^p*log(f*x^m), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(f*x**m)*(a+b*ln(c*(e*x+d)**n))**p,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^p \log\left(fx^m\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(f*x^m)*(a+b*log(c*(e*x+d)^n))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^p*log(f*x^m), x)
```

3.378 $\int \frac{\log(a+bx)\log(c+dx)}{x}\,dx$

Optimal. Leaf size=364

$$\text{PolyLog}\left(3,\frac{c(a+bx)}{a(c+dx)}\right)-\text{PolyLog}\left(3,\frac{d(a+bx)}{b(c+dx)}\right)+\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}\left(2,\frac{c(a+bx)}{a(c+dx)}\right)-\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}$$

```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + ((Log[-((b*x)/a)] + Log[(b*c -
a*d)/(b*(c + d*x))] - Log[-(((b*c - a*d)*x)/(a*(c + d*x)))])*Log[(a*(c + d*
x))/(c*(a + b*x))]^2)/2 - ((Log[-((b*x)/a)] - Log[-((d*x)/c)])*(Log[a + b*x
] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2 + (Log[c + d*x] - Log[(a*(c + d*
x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (c*(a + b*x))/(a*(c + d*x))] - Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (Log[a + b*x] + Log[(a*(c + d
*x))/(c*(a + b*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + Po
lyLog[3, (c*(a + b*x))/(a*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*
x))] - PolyLog[3, 1 + (d*x)/c]
```

Rubi [A] time = 0.0545108, antiderivative size = 364, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {2435}

$$\text{PolyLog}\left(3,\frac{c(a+bx)}{a(c+dx)}\right)-\text{PolyLog}\left(3,\frac{d(a+bx)}{b(c+dx)}\right)+\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}\left(2,\frac{c(a+bx)}{a(c+dx)}\right)-\log\left(\frac{a(c+dx)}{c(a+bx)}\right)\text{PolyLog}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[a + b*x]*Log[c + d*x])/x,x]
```


```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + ((Log[-((b*x)/a)] + Log[(b*c -
a*d)/(b*(c + d*x))] - Log[-(((b*c - a*d)*x)/(a*(c + d*x)))])*Log[(a*(c + d*
x))/(c*(a + b*x))]^2)/2 - ((Log[-((b*x)/a)] - Log[-((d*x)/c)])*(Log[a + b*x
] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2 + (Log[c + d*x] - Log[(a*(c + d*
x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (c*(a + b*x))/(a*(c + d*x))] - Log[(a*(c + d*x))/(c*(a + b*x
))]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (Log[a + b*x] + Log[(a*(c + d
*x))/(c*(a + b*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + Po
lyLog[3, (c*(a + b*x))/(a*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*
x))] - PolyLog[3, 1 + (d*x)/c]
```


Rule 2435

```
Int[(Log[(a_) + (b_.)*(x_)]*Log[(c_) + (d_.)*(x_)])/(x_), x_Symbol] :> Simp
[Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x], x] + (Simp[(1*(Log[-((b*x)/a)]
- Log[-(((b*c - a*d)*x)/(a*(c + d*x)))] + Log[(b*c - a*d)/(b*(c + d*x))])*L
og[(a*(c + d*x))/(c*(a + b*x))]^2)/2, x] - Simp[(1*(Log[-((b*x)/a)] - Log[-
((d*x)/c)])*(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2, x] + Si
mp[(Log[c + d*x] - Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a
], x] + Simp[(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1
 + (d*x)/c], x] + Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2, (c*(a +
b*x))/(a*(c + d*x))], x] - Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2,
 (d*(a + b*x))/(b*(c + d*x))], x] - Simp[PolyLog[3, 1 + (b*x)/a], x] - Simp
[PolyLog[3, 1 + (d*x)/c], x] + Simp[PolyLog[3, (c*(a + b*x))/(a*(c + d*x))]
, x] - Simp[PolyLog[3, (d*(a + b*x))/(b*(c + d*x))], x]) /; FreeQ[{a, b, c,
 d}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\int \frac{\log(a+bx)\log(c+dx)}{x}\,dx = \log\left(-\frac{bx}{a}\right)\log(a+bx)\log(c+dx) + \frac{1}{2}\left(\log\left(-\frac{bx}{a}\right) + \log\left(\frac{bc-ad}{b(c+dx)}\right) - \log\left(-\frac{(bc-a}{a(c+a}\right.\right.$$

Mathematica [A] time = 0.0943344, size = 394, normalized size = 1.08

$$\text{PolyLog}\left(3,\frac{a(c+dx)}{c(a+bx)}\right) - \text{PolyLog}\left(3,\frac{b(c+dx)}{d(a+bx)}\right) + \log\left(\frac{a(c+dx)}{c(a+bx)}\right)\left(\text{PolyLog}\left(2,\frac{b(c+dx)}{d(a+bx)}\right) - \text{PolyLog}\left(2,\frac{a(c+d}{c(a+b}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[a + b*x]*Log[c + d*x])/x,x]
```

```
[Out] Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x] + (Log[(a*(c + d*x))/(c*(a + b*x)
)]^2*(Log[-((b*x)/a)] + Log[(-(b*c) + a*d)/(d*(a + b*x))] - Log[(b*c*x - a*
d*x)/(a*c + b*c*x)]))/2 + (-Log[-((b*x)/a)] + Log[-((d*x)/c)])*Log[(a*(c +
d*x))/(c*(a + b*x))]*Log[1 + (d*x)/c] + ((Log[-((b*x)/a)] - Log[-((d*x)/c)]
)*Log[1 + (d*x)/c]*(-2*Log[a + b*x] + Log[1 + (d*x)/c]))/2 + (Log[c + d*x]
- Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a] + Log[(a*(c + d
*x))/(c*(a + b*x))]*(-PolyLog[2, (a*(c + d*x))/(c*(a + b*x))] + PolyLog[2,
(b*(c + d*x))/(d*(a + b*x))]) + (Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b
*x))])*PolyLog[2, 1 + (d*x)/c] - PolyLog[3, 1 + (b*x)/a] + PolyLog[3, (a*(c
 + d*x))/(c*(a + b*x))] - PolyLog[3, (b*(c + d*x))/(d*(a + b*x))] - PolyLog
[3, 1 + (d*x)/c]
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int \frac{\ln(bx+a)\ln(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(b*x+a)*ln(d*x+c)/x,x)
```

```
[Out] int(ln(b*x+a)*ln(d*x+c)/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\log(bx+a)\log(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="maxima")
```

```
[Out] integrate(log(b*x + a)*log(d*x + c)/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\log(bx+a)\log(dx+c)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="fricas")
```

```
[Out] integral(log(b*x + a)*log(d*x + c)/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(b*x+a)*ln(d*x+c)/x,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\log(bx+a)\log(dx+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(b*x+a)*log(d*x+c)/x,x, algorithm="giac")
```

```
[Out] integrate(log(b*x + a)*log(d*x + c)/x, x)
```

3.379 $\int x^2 (a + b\log(c(d+ex)^n)) \left(f + g\log(c(d+ex)^n)\right) dx$

Optimal. Leaf size=258

$$\frac{d^3 n \log(d+ex)\left(ag + 2bg\log(c(d+ex)^n) + bf\right)}{3e^3} - \frac{d^2 n(d+ex)\left(ag + 2bg\log(c(d+ex)^n) + bf\right)}{e^3} + \frac{dn(d+ex)^2\left(ag + 2\right.}{}$$

```
[Out] (2*b*d^2*g*n^2*x)/e^2 - (b*d*g*n^2*(d + e*x)^2)/(2*e^3) + (2*b*g*n^2*(d + e
*x)^3)/(27*e^3) - (b*d^3*g*n^2*Log[d + e*x]^2)/(3*e^3) + (x^3*(a + b*Log[c*
(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/3 - (d^2*n*(d + e*x)*(b*f + a*g +
 2*b*g*Log[c*(d + e*x)^n]))/e^3 + (d*n*(d + e*x)^2*(b*f + a*g + 2*b*g*Log[c
*(d + e*x)^n]))/(2*e^3) - (n*(d + e*x)^3*(b*f + a*g + 2*b*g*Log[c*(d + e*x)
^n]))/(9*e^3) + (d^3*n*Log[d + e*x]*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))
/(3*e^3)
```

Rubi [A] time = 0.435276, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.219, Rules used = {2439, 2411, 43, 2334, 12, 14, 2301}

$$-\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3} - \frac{6d^3\log(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3}\right)(a + b\log(c(d+ex)^n)) + \frac{1}{3}x^3(a + b\log(c(d+e\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (2*b*d^2*g*n^2*x)/e^2 - (b*d*g*n^2*(d + e*x)^2)/(2*e^3) + (2*b*g*n^2*(d + e
*x)^3)/(27*e^3) - (b*d^3*g*n^2*Log[d + e*x]^2)/(3*e^3) - (g*n*((18*d^2*(d +
 e*x))/e^3 - (9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*Log[d + e
*x])/e^3)*(a + b*Log[c*(d + e*x)^n]))/18 - (b*n*((18*d^2*(d + e*x))/e^3 - (
9*d*(d + e*x)^2)/e^3 + (2*(d + e*x)^3)/e^3 - (6*d^3*Log[d + e*x])/e^3)*(f +
 g*Log[c*(d + e*x)^n]))/18 + (x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(
d + e*x)^n]))/3
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] && !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int x^2 (a+b\log(c(d+ex)^n)) \left(f+g\log(c(d+ex)^n)\right) dx = \frac{1}{3}x^3 (a+b\log(c(d+ex)^n)) \left(f+g\log(c(d+ex)^n)\right) - \frac{1}{3}(ben) \int$$

$$= \frac{1}{3}x^3 (a+b\log(c(d+ex)^n)) \left(f+g\log(c(d+ex)^n)\right) - \frac{1}{3}(bn)\,\mathrm{Su}$$

$$= -\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3} - \frac{6d^3\log(d}{e^3}\right.$$

$$= -\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3} - \frac{6d^3\log(d}{e^3}\right.$$

$$= -\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3} - \frac{6d^3\log(d}{e^3}\right.$$

$$= -\frac{1}{18}gn\left(\frac{18d^2(d+ex)}{e^3} - \frac{9d(d+ex)^2}{e^3} + \frac{2(d+ex)^3}{e^3} - \frac{6d^3\log(d}{e^3}\right.$$

$$= 2\left(\frac{bd^2gn^2x}{e^2} - \frac{bdgn^2(d+ex)^2}{4e^3} + \frac{bgn^2(d+ex)^3}{27e^3} - \frac{bd^3gn^2\log^2(}{6e^3}\right.$$

Mathematica [A] time = 0.0835494, size = 342, normalized size = 1.33

$$\frac{1}{3}agx^3\log(c(d+ex)^n) - \frac{ad^2gnx}{3e^2} + \frac{ad^3gn\log(d+ex)}{3e^3} + \frac{adgnx^2}{6e} + \frac{1}{3}afx^3 - \frac{1}{9}agnx^3 + \frac{bd^3g\log^2(c(d+ex)^n)}{3e^3} - \frac{11bd^3gn}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] -(b*d^2*f*n*x)/(3*e^2) - (a*d^2*g*n*x)/(3*e^2) + (11*b*d^2*g*n^2*x)/(9*e^2)
 + (b*d*f*n*x^2)/(6*e) + (a*d*g*n*x^2)/(6*e) - (5*b*d*g*n^2*x^2)/(18*e) + (
a*f*x^3)/3 - (b*f*n*x^3)/9 - (a*g*n*x^3)/9 + (2*b*g*n^2*x^3)/27 + (b*d^3*f*
n*Log[d + e*x])/(3*e^3) + (a*d^3*g*n*Log[d + e*x])/(3*e^3) - (11*b*d^3*g*n*
Log[c*(d + e*x)^n])/(9*e^3) - (2*b*d^2*g*n*x*Log[c*(d + e*x)^n])/(3*e^2) +
(b*d*g*n*x^2*Log[c*(d + e*x)^n])/(3*e) + (b*f*x^3*Log[c*(d + e*x)^n])/3 + (
a*g*x^3*Log[c*(d + e*x)^n])/3 - (2*b*g*n*x^3*Log[c*(d + e*x)^n])/9 + (b*d^3
*g*Log[c*(d + e*x)^n]^2)/(3*e^3) + (b*g*x^3*Log[c*(d + e*x)^n]^2)/3
```

Maple [C] time = 0.603, size = 1785, normalized size = 6.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/3*a*f*x^3-1/9*n*a*g*x^3-1/9*n*b*f*x^3+2/3/e^3*ln(c)*ln(e*x+d)*b*d^3*g*n+1
/3/e*ln(c)*b*d*g*n*x^2-2/3/e^2*ln(c)*b*d^2*g*n*x-1/12*Pi^2*b*g*x^3*csgn(I*c
)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/6*Pi^2*b*g*x^3*csgn(I*c)^2*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/6*Pi^2*b*g*x^3*csgn(I*c)*csgn(I*(
e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/3*Pi^2*b*g*x^3*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)^4+1/6*I*Pi*a*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
1/6*I*Pi*a*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*b*f*x^3*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-1/3*I*ln(c)*Pi*b*g*x^3*csgn(I*c*(e*x+d)^n)^3+1/9*I*n*Pi*b*g*x^
3*csgn(I*c*(e*x+d)^n)^3+2/27*b*g*n^2*x^3+1/3*g*b*x^3*ln((e*x+d)^n)^2+1/9*(-
3*I*Pi*b*e^3*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+3*I*Pi*b
*e^3*g*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+3*I*Pi*b*e^3*g*x^3*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-3*I*Pi*b*e^3*g*x^3*csgn(I*c*(e*x+d)^n)^3+6*ln(c)
*b*e^3*g*x^3-2*b*e^3*g*n*x^3+3*a*e^3*g*x^3+3*b*d*e^2*g*n*x^2+3*b*e^3*f*x^3+
6*ln(e*x+d)*b*d^3*g*n-6*b*d^2*e*g*n*x)/e^3*ln((e*x+d)^n)+1/3*ln(c)*b*f*x^3+
1/3*ln(c)*a*g*x^3+1/3*ln(c)^2*b*g*x^3-1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*(e*x+
d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*I/e^3*Pi*ln(e*x+d)*b*d^3*g*n*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+1/3*I/e^3*Pi*ln(e*x+d)*b*d^3*g*n*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)^2+1/6*I/e*Pi*b*d*g*n*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*
I/e*Pi*b*d*g*n*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3*I/e^2*Pi*b*d
^2*g*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/6*I/e*Pi*b*d*g*n*x^2*csgn(I*c)*c
sgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*c)*csg
n(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^3*Pi*ln(e*x+d)*b*d^3*g*n*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-5/18/e*b*d*g*n^2*x^2-2/9*n*ln(c)*b
*g*x^3-1/12*Pi^2*b*g*x^3*csgn(I*c*(e*x+d)^n)^6-1/9*I*n*Pi*b*g*x^3*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2-1/9*I*n*Pi*b*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2+1/3*I*ln(c)*Pi*b*g*x^3*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I
*Pi*a*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I*Pi*b*f*x^
3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*I*ln(c)*Pi*b*g*x^3*cs
gn(I*c)*csgn(I*c*(e*x+d)^n)^2-11/9*b*d^3*g*n^2/e^3*ln(e*x+d)+1/6/e*a*d*g*n*
x^2+1/6/e*b*d*f*n*x^2-1/3/e^2*a*d^2*g*n*x+1/6*Pi^2*b*g*x^3*csgn(I*c)*csgn(I
*c*(e*x+d)^n)^5-1/12*Pi^2*b*g*x^3*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4
-1/12*Pi^2*b*g*x^3*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/6*Pi^2*b*g*x^3*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5+1/3/e^3*ln(e*x+d)*b*d^3*f*n+1/3/e^3*ln(e
*x+d)*a*d^3*g*n-1/6*I*Pi*a*g*x^3*csgn(I*c*(e*x+d)^n)^3-1/6*I*Pi*b*f*x^3*csg
n(I*c*(e*x+d)^n)^3-1/3*b*d^3*g*n^2*ln(e*x+d)^2/e^3+11/9*b*d^2*g*n^2*x/e^2-1
/3*I*ln(c)*Pi*b*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/9*I
*n*Pi*b*g*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*I/e^3*Pi*
```

```
ln(e*x+d)*b*d^3*g*n*csgn(I*c*(e*x+d)^n)^3-1/6*I/e*Pi*b*d*g*n*x^2*csgn(I*c*(
e*x+d)^n)^3+1/3*I/e^2*Pi*b*d^2*g*n*x*csgn(I*c*(e*x+d)^n)^3-1/3*b*d^2*f*n*x/
e^2
```

Maxima [A] time = 1.13076, size = 370, normalized size = 1.43

$$\frac{1}{3}\,bgx^3\log\left((ex+d)^n c\right)^2+\frac{1}{3}\,bfx^3\log\left((ex+d)^n c\right)+\frac{1}{3}\,agx^3\log\left((ex+d)^n c\right)+\frac{1}{3}\,afx^3+\frac{1}{18}\,befn\left(\frac{6\,d^3\log\left(ex+d\right)}{e^4}-\frac{2\,e^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="m
axima")
```

```
[Out] 1/3*b*g*x^3*log((e*x + d)^n*c)^2 + 1/3*b*f*x^3*log((e*x + d)^n*c) + 1/3*a*g
*x^3*log((e*x + d)^n*c) + 1/3*a*f*x^3 + 1/18*b*e*f*n*(6*d^3*log(e*x + d)/e^
4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) + 1/18*a*e*g*n*(6*d^3*log(e*x +
d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3) + 1/54*(6*e*n*(6*d^3*log(e*
x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*x)/e^3)*log((e*x + d)^n*c) + (4
*e^3*x^3 - 15*d*e^2*x^2 - 18*d^3*log(e*x + d)^2 + 66*d^2*e*x - 66*d^3*log(e
*x + d))*n^2/e^3)*b*g
```

Fricas [A] time = 1.96487, size = 733, normalized size = 2.84

$$18\,be^3gx^3\log\left(c\right)^2+2\left(2\,be^3gn^2+9\,ae^3f-3\left(be^3f+ae^3g\right)n\right)x^3-3\left(5\,bde^2gn^2-3\left(bde^2f+ade^2g\right)n\right)x^2+18\left(be^3gn^2x^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="f
ricas")
```

```
[Out] 1/54*(18*b*e^3*g*x^3*log(c)^2 + 2*(2*b*e^3*g*n^2 + 9*a*e^3*f - 3*(b*e^3*f +
 a*e^3*g)*n)*x^3 - 3*(5*b*d*e^2*g*n^2 - 3*(b*d*e^2*f + a*d*e^2*g)*n)*x^2 +
18*(b*e^3*g*n^2*x^3 + b*d^3*g*n^2)*log(e*x + d)^2 + 6*(11*b*d^2*e*g*n^2 - 3
*(b*d^2*e*f + a*d^2*e*g)*n)*x + 6*(3*b*d*e^2*g*n^2*x^2 - 6*b*d^2*e*g*n^2*x
- 11*b*d^3*g*n^2 - (2*b*e^3*g*n^2 - 3*(b*e^3*f + a*e^3*g)*n)*x^3 + 3*(b*d^3
*f + a*d^3*g)*n + 6*(b*e^3*g*n*x^3 + b*d^3*g*n)*log(c))*log(e*x + d) + 6*(3
*b*d*e^2*g*n*x^2 - 6*b*d^2*e*g*n*x - (2*b*e^3*g*n - 3*b*e^3*f - 3*a*e^3*g)*
x^3)*log(c))/e^3
```

Sympy [A] time = 5.47904, size = 508, normalized size = 1.97

$$\begin{cases}\frac{ad^3gn\log\left(d+ex\right)}{3e^3}-\frac{ad^2gnx}{3e^2}+\frac{adgnx^2}{6e}+\frac{afx^3}{3}+\frac{agnx^3\log\left(d+ex\right)}{3}-\frac{agnx^3}{9}+\frac{agx^3\log\left(c\right)}{3}+\frac{bd^3fn\log\left(d+ex\right)}{3e^3}+\frac{bd^3gn^2\log\left(d+ex\right)^2}{3e^3}-\frac{11bd^3gn^2\log}{9e^3} \\ \frac{x^3\left(a+b\log\left(cd^n\right)\right)\left(f+g\log\left(cd^n\right)\right)}{3}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*d**3*g*n*log(d + e*x)/(3*e**3) - a*d**2*g*n*x/(3*e**2) + a*d*g
*n*x**2/(6*e) + a*f*x**3/3 + a*g*n*x**3*log(d + e*x)/3 - a*g*n*x**3/9 + a*g
*x**3*log(c)/3 + b*d**3*f*n*log(d + e*x)/(3*e**3) + b*d**3*g*n**2*log(d + e
*x)**2/(3*e**3) - 11*b*d**3*g*n**2*log(d + e*x)/(9*e**3) + 2*b*d**3*g*n*log
(c)*log(d + e*x)/(3*e**3) - b*d**2*f*n*x/(3*e**2) - 2*b*d**2*g*n**2*x*log(d
 + e*x)/(3*e**2) + 11*b*d**2*g*n**2*x/(9*e**2) - 2*b*d**2*g*n*x*log(c)/(3*e
**2) + b*d*f*n*x**2/(6*e) + b*d*g*n**2*x**2*log(d + e*x)/(3*e) - 5*b*d*g*n*
*2*x**2/(18*e) + b*d*g*n*x**2*log(c)/(3*e) + b*f*n*x**3*log(d + e*x)/3 - b*
f*n*x**3/9 + b*f*x**3*log(c)/3 + b*g*n**2*x**3*log(d + e*x)**2/3 - 2*b*g*n*
*2*x**3*log(d + e*x)/9 + 2*b*g*n**2*x**3/27 + 2*b*g*n*x**3*log(c)*log(d + e
*x)/3 - 2*b*g*n*x**3*log(c)/9 + b*g*x**3*log(c)**2/3, Ne(e, 0)), (x**3*(a +
 b*log(c*d**n))*(f + g*log(c*d**n))/3, True))
```

Giac [B] time = 1.29303, size = 1021, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="g
iac")
```

```
[Out] 1/3*(x*e + d)^3*b*g*n^2*e^(-3)*log(x*e + d)^2 - (x*e + d)^2*b*d*g*n^2*e^(-3
)*log(x*e + d)^2 + (x*e + d)*b*d^2*g*n^2*e^(-3)*log(x*e + d)^2 - 2/9*(x*e +
 d)^3*b*g*n^2*e^(-3)*log(x*e + d) + (x*e + d)^2*b*d*g*n^2*e^(-3)*log(x*e +
d) - 2*(x*e + d)*b*d^2*g*n^2*e^(-3)*log(x*e + d) + 2/3*(x*e + d)^3*b*g*n*e^
(-3)*log(x*e + d)*log(c) - 2*(x*e + d)^2*b*d*g*n*e^(-3)*log(x*e + d)*log(c)
 + 2*(x*e + d)*b*d^2*g*n*e^(-3)*log(x*e + d)*log(c) + 2/27*(x*e + d)^3*b*g*
n^2*e^(-3) - 1/2*(x*e + d)^2*b*d*g*n^2*e^(-3) + 2*(x*e + d)*b*d^2*g*n^2*e^(
-3) + 1/3*(x*e + d)^3*b*f*n*e^(-3)*log(x*e + d) - (x*e + d)^2*b*d*f*n*e^(-3
)*log(x*e + d) + (x*e + d)*b*d^2*f*n*e^(-3)*log(x*e + d) + 1/3*(x*e + d)^3*
a*g*n*e^(-3)*log(x*e + d) - (x*e + d)^2*a*d*g*n*e^(-3)*log(x*e + d) + (x*e
+ d)*a*d^2*g*n*e^(-3)*log(x*e + d) - 2/9*(x*e + d)^3*b*g*n*e^(-3)*log(c) +
(x*e + d)^2*b*d*g*n*e^(-3)*log(c) - 2*(x*e + d)*b*d^2*g*n*e^(-3)*log(c) + 1
/3*(x*e + d)^3*b*g*e^(-3)*log(c)^2 - (x*e + d)^2*b*d*g*e^(-3)*log(c)^2 + (x
*e + d)*b*d^2*g*e^(-3)*log(c)^2 - 1/9*(x*e + d)^3*b*f*n*e^(-3) + 1/2*(x*e +
 d)^2*b*d*f*n*e^(-3) - (x*e + d)*b*d^2*f*n*e^(-3) - 1/9*(x*e + d)^3*a*g*n*e
^(-3) + 1/2*(x*e + d)^2*a*d*g*n*e^(-3) - (x*e + d)*a*d^2*g*n*e^(-3) + 1/3*(
x*e + d)^3*b*f*e^(-3)*log(c) - (x*e + d)^2*b*d*f*e^(-3)*log(c) + (x*e + d)*
b*d^2*f*e^(-3)*log(c) + 1/3*(x*e + d)^3*a*g*e^(-3)*log(c) - (x*e + d)^2*a*d
*g*e^(-3)*log(c) + (x*e + d)*a*d^2*g*e^(-3)*log(c) + 1/3*(x*e + d)^3*a*f*e^
(-3) - (x*e + d)^2*a*d*f*e^(-3) + (x*e + d)*a*d^2*f*e^(-3)
```

3.380 $\int x(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)dx$

Optimal. Leaf size=196

$$-\frac{d^2n\log(d+ex)\left(ag+2bg\log(c(d+ex)^n)+bf\right)}{2e^2}+\frac{dn(d+ex)\left(ag+2bg\log(c(d+ex)^n)+bf\right)}{e^2}-\frac{n(d+ex)^2\left(ag+2bg\log\right.}{4e}$$

```
[Out] (-2*b*d*g*n^2*x)/e + (b*g*n^2*(d + e*x)^2)/(4*e^2) + (b*d^2*g*n^2*Log[d + e
*x]^2)/(2*e^2) + (x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n])
)/2 + (d*n*(d + e*x)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/e^2 - (n*(d +
e*x)^2*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(4*e^2) - (d^2*n*Log[d + e*x
]*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(2*e^2)
```

Rubi [A] time = 0.370905, antiderivative size = 206, normalized size of antiderivative = 1.05, number of steps used = 13, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {2439, 2411, 43, 2334, 12, 14, 2301}

$$\frac{1}{4}gn\left(-\frac{2d^2\log(d+ex)}{e^2}+\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}\right)(a+b\log(c(d+ex)^n))+\frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(g\log(c(d+ex)^n\right.$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (-2*b*d*g*n^2*x)/e + (b*g*n^2*(d + e*x)^2)/(4*e^2) + (b*d^2*g*n^2*Log[d + e
*x]^2)/(2*e^2) + (g*n*((4*d*(d + e*x))/e^2 - (d + e*x)^2/e^2 - (2*d^2*Log[d
 + e*x])/e^2)*(a + b*Log[c*(d + e*x)^n]))/4 + (b*n*((4*d*(d + e*x))/e^2 - (
d + e*x)^2/e^2 - (2*d^2*Log[d + e*x])/e^2)*(f + g*Log[c*(d + e*x)^n]))/4 +
(x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/2
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rubi steps

$$\int x\,(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)dx = \frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-\frac{1}{2}(ben)$$

$$= \frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-\frac{1}{2}(bn)$$

$$= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)(a+b\log(c$$

$$= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)(a+b\log(c$$

$$= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)(a+b\log(c$$

$$= \frac{1}{4}gn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)(a+b\log(c$$

$$= 2\left(-\frac{bdgn^2x}{e}+\frac{bgn^2(d+ex)^2}{8e^2}+\frac{bd^2gn^2\log^2(d+ex)}{4e^2}\right)+\frac{1}{4}gn$$

Mathematica [A] time = 0.0484104, size = 263, normalized size = 1.34

$$\frac{1}{2}agx^2\log(c(d+ex)^n)-\frac{ad^2gn\log(d+ex)}{2e^2}+\frac{adgnx}{2e}+\frac{1}{2}afx^2-\frac{1}{4}agnx^2-\frac{bd^2g\log^2(c(d+ex)^n)}{2e^2}+\frac{3bd^2gn\log(c(d+$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (b*d*f*n*x)/(2*e) + (a*d*g*n*x)/(2*e) - (3*b*d*g*n^2*x)/(2*e) + (a*f*x^2)/2
 - (b*f*n*x^2)/4 - (a*g*n*x^2)/4 + (b*g*n^2*x^2)/4 - (b*d^2*f*n*Log[d + e*x
])/(2*e^2) - (a*d^2*g*n*Log[d + e*x])/(2*e^2) + (3*b*d^2*g*n*Log[c*(d + e*x
)^n])/(2*e^2) + (b*d*g*n*x*Log[c*(d + e*x)^n])/e + (b*f*x^2*Log[c*(d + e*x)
^n])/2 + (a*g*x^2*Log[c*(d + e*x)^n])/2 - (b*g*n*x^2*Log[c*(d + e*x)^n])/2
- (b*d^2*g*Log[c*(d + e*x)^n]^2)/(2*e^2) + (b*g*x^2*Log[c*(d + e*x)^n]^2)/2
```

Maple [C] time = 0.603, size = 1558, normalized size = 8.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n)),x)
```

```
[Out] 1/2*(-I*Pi*b*e^2*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*Pi
*b*e^2*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*Pi*b*e^2*g*x^2*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)^2-I*Pi*b*e^2*g*x^2*csgn(I*c*(e*x+d)^n)^3+2*ln(c)*b
*e^2*g*x^2-b*e^2*g*n*x^2+a*e^2*g*x^2-2*b*d^2*g*n*ln(e*x+d)+2*b*d*e*g*n*x+b*
e^2*f*x^2)/e^2*ln((e*x+d)^n)+1/4*x^2*b*g*n^2-1/4*x^2*n*a*g-1/4*x^2*n*b*f+1/
2*a*f*x^2+1/2*ln(c)*b*f*x^2+1/2*ln(c)^2*b*g*x^2+1/2*ln(c)*a*g*x^2+1/2*g*b*x
^2*ln((e*x+d)^n)^2-1/8*Pi^2*b*g*x^2*csgn(I*c*(e*x+d)^n)^6-1/2*n*ln(c)*b*g*x
^2-1/2*I*ln(c)*Pi*b*g*x^2*csgn(I*c*(e*x+d)^n)^3+1/4*I*n*Pi*b*g*x^2*csgn(I*c
*(e*x+d)^n)^3+1/4*I*Pi*a*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*f
*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*a*g*x^2*csgn(I*(e*x+d)^n)*csg
n(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2
+1/2*b*d^2*g*n^2*ln(e*x+d)^2/e^2-1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^
n)*csgn(I*c*(e*x+d)^n)+1/2/e*a*d*g*n*x-1/2/e^2*ln(e*x+d)*a*d^2*g*n-1/2/e^2*
ln(e*x+d)*b*d^2*f*n-1/8*Pi^2*b*g*x^2*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4+1/4*
Pi^2*b*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^5-1/8*Pi^2*b*g*x^2*csgn(I*(e*x+d
)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/4*Pi^2*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e
*x+d)^n)^5-1/4*I*Pi*a*g*x^2*csgn(I*c*(e*x+d)^n)^3-1/4*I*Pi*b*f*x^2*csgn(I*c
*(e*x+d)^n)^3-3/2*b*d*g*n^2*x/e+1/2*I*ln(c)*Pi*b*g*x^2*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^2+1/2*I*ln(c)*Pi*b*g*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-
1/4*I*n*Pi*b*g*x^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/4*I*n*Pi*b*g*x^2*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/4*I*Pi*a*g*x^2*csgn(I*c)*csgn(I*(e*x+d
)^n)*csgn(I*c*(e*x+d)^n)+3/2*b*d^2*g*n^2/e^2*ln(e*x+d)-1/8*Pi^2*b*g*x^2*csg
n(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/4*Pi^2*b*g*x^2*csgn(I*
c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^3+1/4*Pi^2*b*g*x^2*csgn(I*c)*csg
n(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3-1/2*Pi^2*b*g*x^2*csgn(I*c)*csgn(I*(e
*x+d)^n)*csgn(I*c*(e*x+d)^n)^4-1/e^2*ln(e*x+d)*ln(c)*b*d^2*g*n+1/e*ln(c)*b*
d*g*n*x+1/2*I/e^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)-1/2*I/e*Pi*b*d*g*n*x*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)-1/2*I/e^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/
2*I/e^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*
I/e*Pi*b*d*g*n*x*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e*Pi*b*d*g*n*x*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I/e^2*ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*
c*(e*x+d)^n)^3-1/2*I*ln(c)*Pi*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)+1/4*I*n*Pi*b*g*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)-1/2*I/e*Pi*b*d*g*n*x*csgn(I*c*(e*x+d)^n)^3+1/2*b*d*f*n*x/e
```

Maxima [A] time = 1.05734, size = 302, normalized size = 1.54

$$\frac{1}{2}bgx^2\log\left(\left(ex+d\right)^nc\right)^2-\frac{1}{4}befn\left(\frac{2d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2dx}{e^2}\right)-\frac{1}{4}aegn\left(\frac{2d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2dx}{e^2}\right)+\frac{1}{2}bfx^2\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="max
ima")
```

```
[Out] 1/2*b*g*x^2*log((e*x + d)^n*c)^2 - 1/4*b*e*f*n*(2*d^2*log(e*x + d)/e^3 + (e
*x^2 - 2*d*x)/e^2) - 1/4*a*e*g*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/
e^2) + 1/2*b*f*x^2*log((e*x + d)^n*c) + 1/2*a*g*x^2*log((e*x + d)^n*c) + 1/
2*a*f*x^2 - 1/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((
e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x +
 d))*n^2/e^2)*b*g
```

Fricas [A] time = 2.16008, size = 554, normalized size = 2.83

$$2\,be^2gx^2\log(c)^2 + \left(be^2gn^2 + 2\,ae^2f - \left(be^2f + ae^2g\right)n\right)x^2 + 2\left(be^2gn^2x^2 - bd^2gn^2\right)\log(ex+d)^2 - 2\left(3\,bdegn^2 - \left(bdef\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="fri
cas")
```

```
[Out] 1/4*(2*b*e^2*g*x^2*log(c)^2 + (b*e^2*g*n^2 + 2*a*e^2*f - (b*e^2*f + a*e^2*g
)*n)*x^2 + 2*(b*e^2*g*n^2*x^2 - b*d^2*g*n^2)*log(e*x + d)^2 - 2*(3*b*d*e*g*
n^2 - (b*d*e*f + a*d*e*g)*n)*x + 2*(2*b*d*e*g*n^2*x + 3*b*d^2*g*n^2 - (b*e^
2*g*n^2 - (b*e^2*f + a*e^2*g)*n)*x^2 - (b*d^2*f + a*d^2*g)*n + 2*(b*e^2*g*n
*x^2 - b*d^2*g*n)*log(c))*log(e*x + d) + 2*(2*b*d*e*g*n*x - (b*e^2*g*n - b*
e^2*f - a*e^2*g)*x^2)*log(c))/e^2
```

Sympy [A] time = 3.04438, size = 389, normalized size = 1.98

$$\begin{cases} -\frac{ad^2gn\log(d+ex)}{2e^2} + \frac{adgnx}{2e} + \frac{afx^2}{2} + \frac{agnx^2\log(d+ex)}{2} - \frac{agnx^2}{4} + \frac{agx^2\log(c)}{2} - \frac{bd^2fn\log(d+ex)}{2e^2} - \frac{bd^2gn^2\log(d+ex)^2}{2e^2} + \frac{3bd^2gn^2\log(d+ex)}{2e^2} \\ \frac{x^2(a+b\log(cd^n))(f+g\log(cd^n))}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((-a*d**2*g*n*log(d + e*x)/(2*e**2) + a*d*g*n*x/(2*e) + a*f*x**2/2
 + a*g*n*x**2*log(d + e*x)/2 - a*g*n*x**2/4 + a*g*x**2*log(c)/2 - b*d**2*f*
n*log(d + e*x)/(2*e**2) - b*d**2*g*n**2*log(d + e*x)**2/(2*e**2) + 3*b*d**2
*g*n**2*log(d + e*x)/(2*e**2) - b*d**2*g*n*log(c)*log(d + e*x)/e**2 + b*d*f
*n*x/(2*e) + b*d*g*n**2*x*log(d + e*x)/e - 3*b*d*g*n**2*x/(2*e) + b*d*g*n*x
*log(c)/e + b*f*n*x**2*log(d + e*x)/2 - b*f*n*x**2/4 + b*f*x**2*log(c)/2 +
b*g*n**2*x**2*log(d + e*x)**2/2 - b*g*n**2*x**2*log(d + e*x)/2 + b*g*n**2*x
**2/4 + b*g*n*x**2*log(c)*log(d + e*x) - b*g*n*x**2*log(c)/2 + b*g*x**2*log
(c)**2/2, Ne(e, 0)), (x**2*(a + b*log(c*d**n))*(f + g*log(c*d**n))/2, True)
)
```

Giac [B] time = 1.36509, size = 644, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="gia
c")
```

```
[Out] 1/2*(x*e + d)^2*b*g*n^2*e^(-2)*log(x*e + d)^2 - (x*e + d)*b*d*g*n^2*e^(-2)*
log(x*e + d)^2 - 1/2*(x*e + d)^2*b*g*n^2*e^(-2)*log(x*e + d) + 2*(x*e + d)*
b*d*g*n^2*e^(-2)*log(x*e + d) + (x*e + d)^2*b*g*n*e^(-2)*log(x*e + d)*log(c
) - 2*(x*e + d)*b*d*g*n*e^(-2)*log(x*e + d)*log(c) + 1/4*(x*e + d)^2*b*g*n^
2*e^(-2) - 2*(x*e + d)*b*d*g*n^2*e^(-2) + 1/2*(x*e + d)^2*b*f*n*e^(-2)*log(
x*e + d) - (x*e + d)*b*d*f*n*e^(-2)*log(x*e + d) + 1/2*(x*e + d)^2*a*g*n*e^
(-2)*log(x*e + d) - (x*e + d)*a*d*g*n*e^(-2)*log(x*e + d) - 1/2*(x*e + d)^2
*b*g*n*e^(-2)*log(c) + 2*(x*e + d)*b*d*g*n*e^(-2)*log(c) + 1/2*(x*e + d)^2*
b*g*e^(-2)*log(c)^2 - (x*e + d)*b*d*g*e^(-2)*log(c)^2 - 1/4*(x*e + d)^2*b*f
*n*e^(-2) + (x*e + d)*b*d*f*n*e^(-2) - 1/4*(x*e + d)^2*a*g*n*e^(-2) + (x*e
+ d)*a*d*g*n*e^(-2) + 1/2*(x*e + d)^2*b*f*e^(-2)*log(c) - (x*e + d)*b*d*f*e
^(-2)*log(c) + 1/2*(x*e + d)^2*a*g*e^(-2)*log(c) - (x*e + d)*a*d*g*e^(-2)*l
og(c) + 1/2*(x*e + d)^2*a*f*e^(-2) - (x*e + d)*a*d*f*e^(-2)
```

3.381 $\int (a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)dx$

Optimal. Leaf size=110

$$\frac{d\left(ag+2bg\log(c(d+ex)^n)+bf\right)^2}{4beg}+x(a+b\log(c(d+ex)^n))\left(g\log(c(d+ex)^n)+f\right)-nx(ag+bf)-\frac{2bgn(d+ex)\log}{}$$

[Out] -((b*f + a*g)*n*x) + 2*b*g*n^2*x - (2*b*g*n*(d + e*x)*Log[c*(d + e*x)^n])/e + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]) + (d*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n])^2)/(4*b*e*g)

Rubi [A] time = 0.222167, antiderivative size = 130, normalized size of antiderivative = 1.18, number of steps used = 11, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {2430, 2411, 2346, 2301, 2295}

$$x(a+b\log(c(d+ex)^n))\left(g\log(c(d+ex)^n)+f\right)+\frac{dg(a+b\log(c(d+ex)^n))^2}{2be}-agnx+\frac{bd\left(g\log(c(d+ex)^n)+f\right)^2}{2eg}-$$

Antiderivative was successfully verified.

[In] Int[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]

[Out] -(b*f*n*x) - a*g*n*x + 2*b*g*n^2*x - (2*b*g*n*(d + e*x)*Log[c*(d + e*x)^n])/e + (d*g*(a + b*Log[c*(d + e*x)^n])^2)/(2*b*e) + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]) + (b*d*(f + g*Log[c*(d + e*x)^n])^2)/(2*e*g)

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)dx = x(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-(ben)\int \frac{x\left(f+\right.}{}$$

$$= x(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-(bn)\,\mathrm{Subst}\left(\int\right.$$

$$= x(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-\frac{(bn)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -bfnx-agnx+\frac{dg(a+b\log(c(d+ex)^n))^2}{2be}+x(a+b\log(c(d+$$

$$= -bfnx-agnx+\frac{dg(a+b\log(c(d+ex)^n))^2}{2be}+x(a+b\log(c(d+$$

Mathematica [A] time = 0.0235027, size = 76, normalized size = 0.69

$$\frac{(d+ex)(ag+b(f-2gn))\log(c(d+ex)^n)+ex(a(f-gn)+bn(2gn-f))+bg(d+ex)\log^2(c(d+ex)^n)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]),x]
```

```
[Out] (e*(a*(f - g*n) + b*n*(-f + 2*g*n))*x + (a*g + b*(f - 2*g*n))*(d + e*x)*Log
[c*(d + e*x)^n] + b*g*(d + e*x)*Log[c*(d + e*x)^n]^2)/e
```

Maple [A] time = 0.086, size = 156, normalized size = 1.4

$$xaf+xag\ln\left(c(ex+d)^n\right)-agnx+\frac{dnag\ln(ex+d)}{e}+xb\ln\left(c(ex+d)^n\right)f-bfnx+\frac{bdfn\ln(ex+d)}{e}+bgx\left(\ln\left(ce^{n\ln(e}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n)),x)
```

```
[Out] x*a*f+x*a*g*ln(c*(e*x+d)^n)-a*g*n*x+a*g/e*n*d*ln(e*x+d)+x*b*ln(c*(e*x+d)^n)
*f-b*f*n*x+b*f/e*n*d*ln(e*x+d)+b*g*x*ln(c*exp(n*ln(e*x+d)))^2+b*d*g/e*ln(c*
exp(n*ln(e*x+d)))^2+2*b*g*n^2*x-2*n^2*b*d*g/e*ln(e*x+d)-2*n*b*g*x*ln(c*exp(
n*ln(e*x+d)))
```

Maxima [A] time = 1.12809, size = 223, normalized size = 2.03

$$-befn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)-aegn\left(\frac{x}{e}-\frac{d\log(ex+d)}{e^2}\right)+bgx\log\left((ex+d)^nc\right)^2+bfx\log\left((ex+d)^nc\right)+agx\log\left((ex+d)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="maxim
a")
```

```
[Out] -b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a*e*g*n*(x/e - d*log(e*x + d)/e^2) +
b*g*x*log((e*x + d)^n*c)^2 + b*f*x*log((e*x + d)^n*c) + a*g*x*log((e*x + d)
^n*c) - (2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x +
 d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*b*g + a*f*x
```

Fricas [A] time = 1.91864, size = 365, normalized size = 3.32

$$\frac{begx\log(c)^2 + \left(begn^2x + bdgn^2\right)\log(ex+d)^2 - \left(2\,begn - bef - aeg\right)x\log(c) + \left(2\,begn^2 + aef - \left(bef + aeg\right)n\right)x - (2}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="frica
s")
```

```
[Out] (b*e*g*x*log(c)^2 + (b*e*g*n^2*x + b*d*g*n^2)*log(e*x + d)^2 - (2*b*e*g*n -
 b*e*f - a*e*g)*x*log(c) + (2*b*e*g*n^2 + a*e*f - (b*e*f + a*e*g)*n)*x - (2
*b*d*g*n^2 - (b*d*f + a*d*g)*n + (2*b*e*g*n^2 - (b*e*f + a*e*g)*n)*x - 2*(b
*e*g*n*x + b*d*g*n)*log(c))*log(e*x + d))/e
```

Sympy [A] time = 1.44923, size = 257, normalized size = 2.34

$$\begin{cases} \frac{adgn\log(d+ex)}{e} + afx + agnx\log(d+ex) - agnx + agx\log(c) + \frac{bdfn\log(d+ex)}{e} + \frac{bdgn^2\log(d+ex)^2}{e} - \frac{2bdgn^2\log(d+ex)}{e} + \frac{2bdgn \\ x\left(a + b\log(cd^n)\right)\left(f + g\log(cd^n)\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n)),x)
```

```
[Out] Piecewise((a*d*g*n*log(d + e*x)/e + a*f*x + a*g*n*x*log(d + e*x) - a*g*n*x
+ a*g*x*log(c) + b*d*f*n*log(d + e*x)/e + b*d*g*n**2*log(d + e*x)**2/e - 2*
b*d*g*n**2*log(d + e*x)/e + 2*b*d*g*n*log(c)*log(d + e*x)/e + b*f*n*x*log(d
 + e*x) - b*f*n*x + b*f*x*log(c) + b*g*n**2*x*log(d + e*x)**2 - 2*b*g*n**2*
x*log(d + e*x) + 2*b*g*n**2*x + 2*b*g*n*x*log(c)*log(d + e*x) - 2*b*g*n*x*l
og(c) + b*g*x*log(c)**2, Ne(e, 0)), (x*(a + b*log(c*d**n))*(f + g*log(c*d**
n)), True))
```

Giac [A] time = 1.25506, size = 289, normalized size = 2.63

$$(xe+d)bgn^2e^{(-1)}\log(xe+d)^2 - 2\,(xe+d)bgn^2e^{(-1)}\log(xe+d) + 2\,(xe+d)bgne^{(-1)}\log(xe+d)\log(c) + 2\,(xe+d)bg$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n)),x, algorithm="giac"
)
```

```
[Out] (x*e + d)*b*g*n^2*e^(-1)*log(x*e + d)^2 - 2*(x*e + d)*b*g*n^2*e^(-1)*log(x*
e + d) + 2*(x*e + d)*b*g*n*e^(-1)*log(x*e + d)*log(c) + 2*(x*e + d)*b*g*n^2
*e^(-1) + (x*e + d)*b*f*n*e^(-1)*log(x*e + d) + (x*e + d)*a*g*n*e^(-1)*log(
x*e + d) - 2*(x*e + d)*b*g*n*e^(-1)*log(c) + (x*e + d)*b*g*e^(-1)*log(c)^2
- (x*e + d)*b*f*n*e^(-1) - (x*e + d)*a*g*n*e^(-1) + (x*e + d)*b*f*e^(-1)*lo
g(c) + (x*e + d)*a*g*e^(-1)*log(c) + (x*e + d)*a*f*e^(-1)
```

3.382 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x}\,dx$

Optimal. Leaf size=158

$$n\mathrm{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)-2bgn^2\mathrm{PolyLog}\left(3,\frac{ex}{d}+1\right)-\frac{\log(x)\left(ag+2bg\log\left(c(d+ex)^{\ldots}\right.\right.}{4bg}$$

```
[Out] Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]) - (Log[x]*(b*f
 + a*g + 2*b*g*Log[c*(d + e*x)^n])^2)/(4*b*g) + (Log[-((e*x)/d)]*(b*f + a*g
 + 2*b*g*Log[c*(d + e*x)^n])^2)/(4*b*g) + n*(b*f + a*g + 2*b*g*Log[c*(d + e
*x)^n])*PolyLog[2, 1 + (e*x)/d] - 2*b*g*n^2*PolyLog[3, 1 + (e*x)/d]
```

Rubi [A] time = 0.325995, antiderivative size = 219, normalized size of antiderivative = 1.39, number of steps used = 11, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2434, 2433, 2375, 2317, 2374, 6589}

$$gn\mathrm{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(a+b\log\left(c(d+ex)^n\right)\right)+bn\mathrm{PolyLog}\left(2,\frac{ex}{d}+1\right)\left(g\log\left(c(d+ex)^n\right)+f\right)-2bgn^2\mathrm{PolyLog}\left(3,\ldots\right.$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] -(g*Log[x]*(a + b*Log[c*(d + e*x)^n])^2)/(2*b) + (g*Log[-((e*x)/d)]*(a + b*
Log[c*(d + e*x)^n])^2)/(2*b) + Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log
[c*(d + e*x)^n]) - (b*Log[x]*(f + g*Log[c*(d + e*x)^n])^2)/(2*g) + (b*Log[-
((e*x)/d)]*(f + g*Log[c*(d + e*x)^n])^2)/(2*g) + g*n*(a + b*Log[c*(d + e*x)
^n])*PolyLog[2, 1 + (e*x)/d] + b*n*(f + g*Log[c*(d + e*x)^n])*PolyLog[2, 1
+ (e*x)/d] - 2*b*g*n^2*PolyLog[3, 1 + (e*x)/d]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x}\,dx = \log(x)\,(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-(ben)\int$$

$$= \log(x)\,(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)-(bn)\,\mathrm{Subs}$$

$$= -\frac{g\log(x)\,(a+b\log(c(d+ex)^n))^2}{2b}+\log(x)\,(a+b\log(c(d+ex)^n)$$

$$= -\frac{g\log(x)\,(a+b\log(c(d+ex)^n))^2}{2b}+\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{2b}$$

$$= -\frac{g\log(x)\,(a+b\log(c(d+ex)^n))^2}{2b}+\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{2b}$$

$$= -\frac{g\log(x)\,(a+b\log(c(d+ex)^n))^2}{2b}+\frac{g\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+}{2b}$$

Mathematica [A] time = 0.0629501, size = 227, normalized size = 1.44

$$agn\mathrm{PolyLog}\left(2,\frac{d+ex}{d}\right)+2bgn\left(\log(x)\left(\log(d+ex)-\log\left(\frac{ex}{d}+1\right)\right)-\mathrm{PolyLog}\left(2,-\frac{ex}{d}\right)\right)(\log(c(d+ex)^n)-n\log(d+$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x,x]
```

```
[Out] a*f*Log[x] + b*f*Log[-((e*x)/d)]*Log[c*(d + e*x)^n] + a*g*Log[-((e*x)/d)]*L
og[c*(d + e*x)^n] + b*g*Log[x]*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])^2 +
 2*b*g*n*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[x]*(Log[d + e*x] - L
og[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + b*f*n*PolyLog[2, (d + e*x)/d]
+ a*g*n*PolyLog[2, (d + e*x)/d] + 2*b*g*n^2*((Log[d + e*x]^2*Log[1 - (d + e
```

```
*x)/d])/2 + Log[d + e*x]*PolyLog[2, (d + e*x)/d] - PolyLog[3, (d + e*x)/d])
```

Maple [C] time = 0.6, size = 1534, normalized size = 9.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x,x)

[Out] -I*ln(x)*Pi*ln((e*x+d)^n)*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^
n)-dilog((e*x+d)/d)*a*g*n-dilog((e*x+d)/d)*b*f*n-I*ln(x)*ln(c)*Pi*b*g*csgn(
I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*I*ln(x)*Pi*a*g*csgn(I*c*(e*x
+d)^n)^3-2*ln(x)*ln(c)*ln((e*x+d)/d)*b*g*n+2*dilog(-e*x/d)*ln((e*x+d)^n)*b*
g*n+2*ln(x)*ln(c)*ln((e*x+d)^n)*b*g+1/2*ln(x)*Pi^2*b*g*csgn(I*c)*csgn(I*c*(
e*x+d)^n)^5-1/4*ln(x)*Pi^2*b*g*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^4+1/
2*ln(x)*Pi^2*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^5-I*Pi*dilog((e*x+d)
/d)*b*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*Pi*dilog((e*x+d)/d)*b*g*n*csgn(
I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*ln(x)*Pi*b*f*csgn(I*c)*csgn(I*(e*x
+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln(x)*ln(c)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2+I*ln(x)*Pi*ln((e*x+d)^n)*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1
/2*I*ln(x)*Pi*a*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln(x)*P
i*ln((e*x+d)/d)*b*g*n*csgn(I*c*(e*x+d)^n)^3+2*ln(-e*x/d)*ln((e*x+d)^n)*ln(e
*x+d)*b*g*n-2*ln(e*x)*ln((e*x+d)^n)*ln(e*x+d)*b*g*n+I*ln(x)*Pi*ln((e*x+d)/d
)*b*g*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln(x)*Pi*ln((e*x+
d)^n)*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+I*ln(x)*ln(c)*Pi*b*g*csgn
(I*c)*csgn(I*c*(e*x+d)^n)^2-ln(x)*ln((e*x+d)/d)*a*g*n-ln(x)*ln((e*x+d)/d)*b
*f*n-2*ln(-e*x/d)*ln(e*x+d)^2*b*g*n^2+ln(e*x)*ln(e*x+d)^2*b*g*n^2+2*polylog
(2,(e*x+d)/d)*ln(e*x+d)*b*g*n^2+ln(1-(e*x+d)/d)*ln(e*x+d)^2*b*g*n^2-1/4*ln(
x)*Pi^2*b*g*csgn(I*c*(e*x+d)^n)^6+ln(x)*ln(c)*b*f+ln(x)*ln(c)^2*b*g+ln(x)*l
n(c)*a*g+ln(e*x)*ln((e*x+d)^n)^2*b*g-2*polylog(3,(e*x+d)/d)*b*g*n^2-2*dilog
(-e*x/d)*ln(e*x+d)*b*g*n^2-2*ln(c)*dilog((e*x+d)/d)*b*g*n-I*ln(x)*Pi*ln((e*
x+d)/d)*b*g*n*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+ln(x)*ln((e*x+d)^n)*a
*g+ln(x)*ln((e*x+d)^n)*b*f+a*f*ln(x)-1/2*I*ln(x)*Pi*b*f*csgn(I*c*(e*x+d)^n)
^3-1/4*ln(x)*Pi^2*b*g*csgn(I*c)^2*csgn(I*c*(e*x+d)^n)^4-1/4*ln(x)*Pi^2*b*g*
csgn(I*c)^2*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^2+1/2*ln(x)*Pi^2*b*g*cs
gn(I*c)*csgn(I*(e*x+d)^n)^2*csgn(I*c*(e*x+d)^n)^3+I*Pi*dilog((e*x+d)/d)*b*g
*n*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-I*ln(x)*Pi*ln((e*x+d)/d)
*b*g*n*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(x)*Pi*b*f*csgn(I*(e*x+d)^n)
*csgn(I*c*(e*x+d)^n)^2-ln(x)*Pi^2*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^4+1/2*ln(x)*Pi^2*b*g*csgn(I*c)^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)^3+1/2*I*ln(x)*Pi*a*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*l
n(x)*Pi*b*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*ln(x)*Pi*a*g*csgn(I*c)*cs
gn(I*c*(e*x+d)^n)^2-I*ln(x)*ln(c)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+I*Pi*dilog((
e*x+d)/d)*b*g*n*csgn(I*c*(e*x+d)^n)^3-I*ln(x)*Pi*ln((e*x+d)^n)*b*g*csgn(I*c
*(e*x+d)^n)^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$af\log(x) + \int \frac{bg\log\left((ex+d)^n\right)^2 + ag\log(c) + \left(g\log(c)^2 + f\log(c)\right)b + \left(\left(2g\log(c) + f\right)b + ag\right)\log\left((ex+d)^n\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="max
ima")
```

```
[Out] a*f*log(x) + integrate((b*g*log((e*x + d)^n)^2 + a*g*log(c) + (g*log(c)^2 +
 f*log(c))*b + ((2*g*log(c) + f)*b + a*g)*log((e*x + d)^n))/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{bg\log\left((ex+d)^n c\right)^2 + af + \left(bf+ag\right)\log\left((ex+d)^n c\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="fri
cas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d+ex\right)^{n}\right)\right)\left(f+g\log\left(c\left(d+ex\right)^{n}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((ex+d)^n c\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x,x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x, x)
```

3.383 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^2} dx$

Optimal. Leaf size=96

$$-\frac{2begn^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{d}+\frac{en\log\left(1-\frac{d}{d+ex}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{d}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(g\log\left(c(d+\right.\right.}{x}$$

```
[Out] -(((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x) + (e*n*(b*f +
a*g + 2*b*g*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/d - (2*b*e*g*n^2*Poly
Log[2, d/(d + e*x)])/d
```

Rubi [A] time = 0.346025, antiderivative size = 169, normalized size of antiderivative = 1.76, number of steps used = 11, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {2439, 2411, 2344, 2301, 2317, 2391}

$$\frac{2begn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{d}-\frac{\left(a+b\log\left(c(d+ex)^n\right)\right)\left(g\log\left(c(d+ex)^n\right)+f\right)}{x}+\frac{egn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] (e*g*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/d - (e*g*(a + b*Log[c*(d
 + e*x)^n])^2)/(2*b*d) + (b*e*n*Log[-((e*x)/d)]*(f + g*Log[c*(d + e*x)^n]))
/d - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x - (b*e*(f +
g*Log[c*(d + e*x)^n])^2)/(2*d*g) + (2*b*e*g*n^2*PolyLog[2, 1 + (e*x)/d])/d
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x^2}\,dx = -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x} + (ben)\int \frac{f+g}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x} + (bn)\,\text{Subst}\left(\int\right.$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x} + \frac{(bn)\,\text{Subst}\left(\int\right.}{}$$

$$= \frac{egn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{d} - \frac{eg\,(a+b\log(c(d+ex)^n))}{2bd}$$

$$= \frac{egn\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n))}{d} - \frac{eg\,(a+b\log(c(d+ex)^n))}{2bd}$$

Mathematica [A] time = 0.0284772, size = 180, normalized size = 1.88

$$\frac{2begn^2\text{PolyLog}\left(2,\frac{d+ex}{d}\right)}{d} - \frac{ag\log(c(d+ex)^n)}{x} + \frac{aegn\log(x)}{d} - \frac{aegn\log(d+ex)}{d} - \frac{af}{x} - \frac{bf\log(c(d+ex)^n)}{x} - \frac{beg\log^2(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^2,x]
```

```
[Out] -((a*f)/x) + (b*e*f*n*Log[x])/d + (a*e*g*n*Log[x])/d - (b*e*f*n*Log[d + e*x
])/d - (a*e*g*n*Log[d + e*x])/d - (b*f*Log[c*(d + e*x)^n])/x - (a*g*Log[c*(
d + e*x)^n])/x + (2*b*e*g*n*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/d - (b*e*g*
Log[c*(d + e*x)^n]^2)/d - (b*g*Log[c*(d + e*x)^n]^2)/x + (2*b*e*g*n^2*PolyL
og[2, (d + e*x)/d])/d
```

Maple [C] time = 0.577, size = 931, normalized size = 9.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^2,x)
```

```
[Out] I*e*n/d*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-I*e*n/d*ln(e*x+d)*Pi*b
*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+b*g*e*n^2/d*ln(e*x+d)^2-ln((e*x+d)^n)/x*a*
g-ln((e*x+d)^n)/x*b*f-2*ln((e*x+d)^n)/x*ln(c)*b*g+I*e*n/d*ln(x)*Pi*b*g*csgn
(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*e*n/d*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2-2*b*g*e*n^2/d*dilog((e*x+d)/d)-I*ln((e*x+d)^n)/x*Pi*b*g*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2-b*g/x*ln((e*x+d)^n)^2-1/4*(-I*b*Pi*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)
^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n
)^3+2*b*ln(c)+2*a)*(-I*g*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
+I*g*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2-I*g*Pi*csgn(I*c*(e*x+d)^n)^3+2*g*ln(c)+2*f)/x-e*n/d*ln(e*x+d)*a
*g-e*n/d*ln(e*x+d)*b*f+e*n/d*ln(x)*a*g+e*n/d*ln(x)*b*f-2*b*g*e*n^2/d*ln(x)*
ln((e*x+d)/d)-2*e*n/d*ln(e*x+d)*ln(c)*b*g+2*e*n/d*ln(x)*ln(c)*b*g+I*e*n/d*l
n(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3-I*e*n/d*ln(x)*Pi*b*g*csgn(I*c*(e*x+d)
^n)^3+I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)+2*b*g*e*n*ln((e*x+d)^n)/d*ln(x)-I*e*n/d*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*ln((e*x+d)^n)/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^
3-2*b*g*e*n*ln((e*x+d)^n)/d*ln(e*x+d)+I*e*n/d*ln(e*x+d)*Pi*b*g*csgn(I*c)*cs
gn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-befn\left(\frac{\log(ex+d)}{d}-\frac{\log(x)}{d}\right)-aegn\left(\frac{\log(ex+d)}{d}-\frac{\log(x)}{d}\right)-bg\left(\frac{\log\left((ex+d)^n\right)^2}{x}-\int\frac{ex\log(c)^2+d\log(c)^2+2(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="m
axima")
```

```
[Out] -b*e*f*n*(log(e*x + d)/d - log(x)/d) - a*e*g*n*(log(e*x + d)/d - log(x)/d)
- b*g*(log((e*x + d)^n)^2/x - integrate((e*x*log(c)^2 + d*log(c)^2 + 2*((e*
n + e*log(c))*x + d*log(c))*log((e*x + d)^n))/(e*x^3 + d*x^2), x)) - b*f*lo
g((e*x + d)^n*c)/x - a*g*log((e*x + d)^n*c)/x - a*f/x
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bg\log\left((ex+d)^n c\right)^2+af+\left(bf+ag\right)\log\left((ex+d)^n c\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)\left(f + g\log\left(c\left(d + ex\right)^{n}\right)\right)}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**2,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(ex + d\right)^{n}c\right) + a\right)\left(g\log\left(\left(ex + d\right)^{n}c\right) + f\right)}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^2,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x^2, x)
```

3.384 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^3}\,dx$

Optimal. Leaf size=156

$$\frac{be^2gn^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{d^2}-\frac{e^2n\log\left(1-\frac{d}{d+ex}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{2d^2}-\frac{en(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right)\right.}{2d^2x}$$

```
[Out] (b*e^2*g*n^2*Log[x])/d^2 - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*
x)^n]))/(2*x^2) - (e*n*(d + e*x)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(2
*d^2*x) - (e^2*n*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)
])/(2*d^2) + (b*e^2*g*n^2*PolyLog[2, d/(d + e*x)])/d^2
```

Rubi [A] time = 0.556868, antiderivative size = 265, normalized size of antiderivative = 1.7, number of steps used = 17, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31}

$$-\frac{be^2gn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{d^2}+\frac{e^2g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{4bd^2}-\frac{e^2gn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{2d^2}-\frac{egn(d+ex)(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] (b*e^2*g*n^2*Log[x])/d^2 - (e*g*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/(2*
d^2*x) - (e^2*g*n*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/(2*d^2) + (e^
2*g*(a + b*Log[c*(d + e*x)^n])^2)/(4*b*d^2) - (b*e*n*(d + e*x)*(f + g*Log[c
*(d + e*x)^n]))/(2*d^2*x) - (b*e^2*n*Log[-((e*x)/d)]*(f + g*Log[c*(d + e*x)
^n]))/(2*d^2) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/(2*
x^2) + (b*e^2*(f + g*Log[c*(d + e*x)^n])^2)/(4*d^2*g) - (b*e^2*g*n^2*PolyLo
g[2, 1 + (e*x)/d])/d^2
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
```

```
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x^3}dx = -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{2x^2} + \frac{1}{2}(ben)\int$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{2x^2} + \frac{1}{2}(bn)\,\mathrm{Sub}$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{2x^2} + \frac{(bn)\,\mathrm{Subst}}{}$$

$$= -\frac{egn(d+ex)(a+b\log(c(d+ex)^n))}{2d^2x} - \frac{ben(d+ex)\left(f+g\log\right.}{2d^2x}$$

$$= \frac{be^2gn^2\log(x)}{d^2} - \frac{egn(d+ex)(a+b\log(c(d+ex)^n))}{2d^2x} - \frac{e^2gn\log}{}$$

$$= \frac{be^2gn^2\log(x)}{d^2} - \frac{egn(d+ex)(a+b\log(c(d+ex)^n))}{2d^2x} - \frac{e^2gn\log}{}$$

Mathematica [A] time = 0.128616, size = 254, normalized size = 1.63

$$begn\left(-\frac{en\mathrm{PolyLog}\left(2,\frac{d+ex}{d}\right)}{d^2} + \frac{e\log^2(c(d+ex)^n)}{2d^2n} - \frac{e\log\left(-\frac{ex}{d}\right)\log(c(d+ex)^n)}{d^2} - \frac{\log(c(d+ex)^n)}{dx} + \frac{en\left(\frac{\log(x)}{d} - \frac{\log(d}{d}\right.}{d}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^3,x]
```

```
[Out] -(a*f)/(2*x^2) + (b*e*f*n*(-(1/(d*x)) - (e*Log[x])/d^2 + (e*Log[d + e*x])/d
^2))/2 + (a*e*g*n*(-(1/(d*x)) - (e*Log[x])/d^2 + (e*Log[d + e*x])/d^2))/2 -
 (b*f*Log[c*(d + e*x)^n])/(2*x^2) - (a*g*Log[c*(d + e*x)^n])/(2*x^2) - (b*g
*Log[c*(d + e*x)^n]^2)/(2*x^2) + b*e*g*n*((e*n*(Log[x]/d - Log[d + e*x]/d))
/d - Log[c*(d + e*x)^n]/(d*x) - (e*Log[-((e*x)/d)]*Log[c*(d + e*x)^n])/d^2
+ (e*Log[c*(d + e*x)^n]^2)/(2*d^2*n) - (e*n*PolyLog[2, (d + e*x)/d])/d^2)
```

Maple [C] time = 0.593, size = 1201, normalized size = 7.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^3,x)
```

```
[Out] 1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)-1/2*I*e*n/d/x*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*e^2*n/
d^2*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*e^2*n/d^2*ln(x)*Pi*b
*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g
*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/2*I*e*n/d/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^3
+1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)+1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
^2-1/2*I*e*n/d/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*ln((e*x+d)^n)
```

```
/x^2*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/2*I*ln((e*x+d)^n)/x^2
*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/2*I*e^2*n/d^2*ln(e*x+d)*Pi*b*g*cs
gn(I*c*(e*x+d)^n)^3+1/2*I*e^2*n/d^2*ln(x)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3-ln((
e*x+d)^n)/x^2*ln(c)*b*g-1/2*ln((e*x+d)^n)/x^2*a*g-1/2*ln((e*x+d)^n)/x^2*b*f
-1/2*b*g/x^2*ln((e*x+d)^n)^2-1/2*e*n/d/x*a*g-1/2*e*n/d/x*b*f+1/2*e^2*n/d^2*
ln(e*x+d)*b*f-1/2*e^2*n/d^2*ln(x)*a*g-1/2*e^2*n/d^2*ln(x)*b*f+1/2*e^2*n/d^2
*ln(e*x+d)*a*g-1/8*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)
+I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(-I*g*Pi*csgn(I*c)*
csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^
2+I*g*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*csgn(I*c*(e*x+d)^n)
^3+2*g*ln(c)+2*f)/x^2-1/2*b*g*e^2*n^2/d^2*ln(e*x+d)^2-b*g*e^2*n^2/d^2*ln(e*
x+d)+b*g*e^2*n^2/d^2*dilog((e*x+d)/d)+1/2*I*ln((e*x+d)^n)/x^2*Pi*b*g*csgn(I
*c*(e*x+d)^n)^3+b*g*e^2*n*ln((e*x+d)^n)/d^2*ln(e*x+d)-b*g*e*n*ln((e*x+d)^n)
/d/x-b*g*e^2*n*ln((e*x+d)^n)/d^2*ln(x)+b*e^2*g*n^2*ln(x)/d^2-1/2*I*e^2*n/d^
2*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/2*I*e*
n/d/x*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+e^2*n/d^2*ln(e
*x+d)*ln(c)*b*g-e^2*n/d^2*ln(x)*ln(c)*b*g+b*g*e^2*n^2/d^2*ln(x)*ln((e*x+d)/
d)-e*n/d/x*ln(c)*b*g
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,befn\left(\frac{e\log\left(ex+d\right)}{d^2}-\frac{e\log\left(x\right)}{d^2}-\frac{1}{dx}\right)+\frac{1}{2}\,aegn\left(\frac{e\log\left(ex+d\right)}{d^2}-\frac{e\log\left(x\right)}{d^2}-\frac{1}{dx}\right)-\frac{1}{2}\,bg\left(\frac{\log\left(\left(ex+d\right)^n\right)^2}{x^2}-2\int\frac{ex\log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="m
axima")
```

```
[Out] 1/2*b*e*f*n*(e*log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)) + 1/2*a*e*g*n*(e*
log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)) - 1/2*b*g*(log((e*x + d)^n)^2/x^
2 - 2*integrate((e*x*log(c)^2 + d*log(c)^2 + ((e*n + 2*e*log(c))*x + 2*d*lo
g(c))*log((e*x + d)^n))/(e*x^4 + d*x^3), x)) - 1/2*b*f*log((e*x + d)^n*c)/x
^2 - 1/2*a*g*log((e*x + d)^n*c)/x^2 - 1/2*a*f/x^2
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{bg\log\left(\left(ex+d\right)^n c\right)^2+af+\left(bf+ag\right)\log\left(\left(ex+d\right)^n c\right)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(a+b\log\left(c\left(d+ex\right)^n\right)\right)\left(f+g\log\left(c\left(d+ex\right)^n\right)\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**3,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**3, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log \left((ex+d)^n c\right)+a\right)\left(g \log \left((ex+d)^n c\right)+f\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^3,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x^3, x)
```

3.385 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(c(d+ex)^n))}{x^4}\,dx$

Optimal. Leaf size=234

$$-\frac{2be^3gn^2\text{PolyLog}\left(2,\frac{d}{d+ex}\right)}{3d^3}+\frac{e^3n\log\left(1-\frac{d}{d+ex}\right)\left(ag+2bg\log\left(c(d+ex)^n\right)+bf\right)}{3d^3}+\frac{e^2n(d+ex)\left(ag+2bg\log\left(c(d+ex)^n\right.\right.}{3d^3x}$$

```
[Out] -(b*e^2*g*n^2)/(3*d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^3*g*n^2*Log[d +
e*x])/(3*d^3) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/(3*
x^3) - (e*n*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(6*d*x^2) + (e^2*n*(d +
 e*x)*(b*f + a*g + 2*b*g*Log[c*(d + e*x)^n]))/(3*d^3*x) + (e^3*n*(b*f + a*g
 + 2*b*g*Log[c*(d + e*x)^n])*Log[1 - d/(d + e*x)])/(3*d^3) - (2*b*e^3*g*n^2
*PolyLog[2, d/(d + e*x)])/(3*d^3)
```

Rubi [A] time = 0.822259, antiderivative size = 365, normalized size of antiderivative = 1.56, number of steps used = 25, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2439, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2319, 44}

$$\frac{2be^3gn^2\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{3d^3}-\frac{e^3g\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{6bd^3}+\frac{e^3gn\log\left(-\frac{ex}{d}\right)\left(a+b\log\left(c(d+ex)^n\right)\right)}{3d^3}+\frac{e^2gn(d+ex)(a+}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -(b*e^2*g*n^2)/(3*d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^3*g*n^2*Log[d +
e*x])/(3*d^3) - (e*g*n*(a + b*Log[c*(d + e*x)^n]))/(6*d*x^2) + (e^2*g*n*(d
+ e*x)*(a + b*Log[c*(d + e*x)^n]))/(3*d^3*x) + (e^3*g*n*Log[-((e*x)/d)]*(a
+ b*Log[c*(d + e*x)^n]))/(3*d^3) - (e^3*g*(a + b*Log[c*(d + e*x)^n])^2)/(6*
b*d^3) - (b*e*n*(f + g*Log[c*(d + e*x)^n]))/(6*d*x^2) + (b*e^2*n*(d + e*x)*
(f + g*Log[c*(d + e*x)^n]))/(3*d^3*x) + (b*e^3*n*Log[-((e*x)/d)]*(f + g*Log
[c*(d + e*x)^n]))/(3*d^3) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e
*x)^n]))/(3*x^3) - (b*e^3*(f + g*Log[c*(d + e*x)^n])^2)/(6*d^3*g) + (2*b*e^
3*g*n^2*PolyLog[2, 1 + (e*x)/d])/(3*d^3)
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{x^4}\,dx = -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{3x^3}+\frac{1}{3}(ben)\int \frac{f+}{}$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{3x^3}+\frac{1}{3}(bn)\,\mathrm{Subst}$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log(c(d+ex)^n)\right)}{3x^3}+\frac{(bn)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{egn\,(a+b\log(c(d+ex)^n))}{6dx^2}-\frac{ben\left(f+g\log(c(d+ex)^n)\right)}{6dx^2}-\frac{(a}{}$$

$$= -\frac{egn\,(a+b\log(c(d+ex)^n))}{6dx^2}+\frac{e^2gn(d+ex)\,(a+b\log(c(d+ex)^n}{3d^3x}$$

$$= -\frac{2be^3gn^2\log(x)}{3d^3}+2\left(-\frac{be^2gn^2}{6d^2x}-\frac{be^3gn^2\log(x)}{6d^3}+\frac{be^3gn^2\log(d+}{6d^3}\right.$$

$$= -\frac{2be^3gn^2\log(x)}{3d^3}+2\left(-\frac{be^2gn^2}{6d^2x}-\frac{be^3gn^2\log(x)}{6d^3}+\frac{be^3gn^2\log(d+}{6d^3}\right.$$

Mathematica [A] time = 0.176225, size = 351, normalized size = 1.5

$$\frac{2be^3gn^2\mathrm{PolyLog}\left(2,\frac{d+ex}{d}\right)}{3d^3}-\frac{ag\log(c(d+ex)^n)}{3x^3}+\frac{1}{3}aegn\left(\frac{e^2\log(x)}{d^3}-\frac{e^2\log(d+ex)}{d^3}+\frac{e}{d^2x}-\frac{1}{2dx^2}\right)-\frac{af}{3x^3}-\frac{be^3g\log^2(}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[c*(d + e*x)^n]))/x^4,x]
```

```
[Out] -(a*f)/(3*x^3) - (b*e^2*g*n^2)/(3*d^2*x) - (b*e^3*g*n^2*Log[x])/d^3 + (b*e^
3*g*n^2*Log[d + e*x])/d^3 + (b*e*f*n*(-1/(2*d*x^2) + e/(d^2*x) + (e^2*Log[x
])/d^3 - (e^2*Log[d + e*x])/d^3))/3 + (a*e*g*n*(-1/(2*d*x^2) + e/(d^2*x) +
(e^2*Log[x])/d^3 - (e^2*Log[d + e*x])/d^3))/3 - (b*f*Log[c*(d + e*x)^n])/(3
*x^3) - (a*g*Log[c*(d + e*x)^n])/(3*x^3) - (b*e*g*n*Log[c*(d + e*x)^n])/(3*
d*x^2) + (2*b*e^2*g*n*Log[c*(d + e*x)^n])/(3*d^2*x) + (2*b*e^3*g*n*Log[-((e
*x)/d)]*Log[c*(d + e*x)^n])/(3*d^3) - (b*e^3*g*Log[c*(d + e*x)^n]^2)/(3*d^3
) - (b*g*Log[c*(d + e*x)^n]^2)/(3*x^3) + (2*b*e^3*g*n^2*PolyLog[2, (d + e*x
)/d])/(3*d^3)
```

Maple [C] time = 0.539, size = 1437, normalized size = 6.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(c*(e*x+d)^n))/x^4,x)
```

```
[Out] 1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/3*I*e^3*n/d^
3*ln(e*x+d)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*c*(e
```

```
*x+d)^n)^3-1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+1/3*I*ln((e*x+d)^
n)/x^3*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-2/3*ln((e*x+d
)^n)/x^3*ln(c)*b*g-1/3*b*g/x^3*ln((e*x+d)^n)^2-1/3*ln((e*x+d)^n)/x^3*a*g-1/
3*ln((e*x+d)^n)/x^3*b*f-1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c*(e*x+d)^n)^3+
1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)-1/12*(-I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*b*Pi*
csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2-I*b*Pi*csgn(I*c*(e*x+d)^n)^3+2*b*ln(c)+2*a)*(-I*g*Pi*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)+I*g*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+I*g*Pi
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-I*g*Pi*csgn(I*c*(e*x+d)^n)^3+2*g*l
n(c)+2*f)/x^3-1/3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*
x+d)^n)^2-1/3*I*ln((e*x+d)^n)/x^3*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/
6*I*e*n/d/x^2*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-2/3*b*g*e^3*n^
2/d^3*dilog((e*x+d)/d)+1/3*b*g*e^3*n^2/d^3*ln(e*x+d)^2-1/3*e^3*n/d^3*ln(e*x
+d)*a*g-1/3*e^3*n/d^3*ln(e*x+d)*b*f+1/3*e^3*n/d^3*ln(x)*a*g+1/3*e^3*n/d^3*l
n(x)*b*f-1/6*e*n/d/x^2*a*g-1/6*e*n/d/x^2*b*f+1/3*e^2*n/d^2/x*a*g+1/3*e^2*n/
d^2/x*b*f-1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2-1/3*I*e^3*n/d^3*ln(e*x+d)*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/
3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-
1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-b*
e^3*g*n^2*ln(x)/d^3+b*e^3*g*n^2*ln(e*x+d)/d^3+1/3*I*ln((e*x+d)^n)/x^3*Pi*b*
g*csgn(I*c*(e*x+d)^n)^3+1/3*I*e^3*n/d^3*ln(x)*Pi*b*g*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2+1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+
1/3*I*e^2*n/d^2/x*Pi*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I*e*n/
d/x^2*Pi*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+2/3*b*g*e^2*n*ln((e*x+d)^n)/d^
2/x-2/3*b*g*e^3*n^2/d^3*ln(x)*ln((e*x+d)/d)-1/3*e*n/d/x^2*ln(c)*b*g+2/3*e^2
*n/d^2/x*ln(c)*b*g-2/3*e^3*n/d^3*ln(e*x+d)*ln(c)*b*g+2/3*e^3*n/d^3*ln(x)*ln
(c)*b*g-2/3*b*g*e^3*n*ln((e*x+d)^n)/d^3*ln(e*x+d)-1/3*b*g*e*n*ln((e*x+d)^n)
/d/x^2+2/3*b*g*e^3*n*ln((e*x+d)^n)/d^3*ln(x)+1/6*I*e*n/d/x^2*Pi*b*g*csgn(I*
c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3*b*e^2*g*n^2/x/d^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{6}\,befn\left(\frac{2\,e^2\log\left(ex+d\right)}{d^3}-\frac{2\,e^2\log\left(x\right)}{d^3}-\frac{2\,ex-d}{d^2x^2}\right)-\frac{1}{6}\,aegn\left(\frac{2\,e^2\log\left(ex+d\right)}{d^3}-\frac{2\,e^2\log\left(x\right)}{d^3}-\frac{2\,ex-d}{d^2x^2}\right)-\frac{1}{3}\,bg\left(\frac{\log\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="m
axima")
```

```
[Out] -1/6*b*e*f*n*(2*e^2*log(e*x + d)/d^3 - 2*e^2*log(x)/d^3 - (2*e*x - d)/(d^2*
x^2)) - 1/6*a*e*g*n*(2*e^2*log(e*x + d)/d^3 - 2*e^2*log(x)/d^3 - (2*e*x - d
)/(d^2*x^2)) - 1/3*b*g*(log((e*x + d)^n)^2/x^3 - 3*integrate(1/3*(3*e*x*log
(c)^2 + 3*d*log(c)^2 + 2*((e*n + 3*e*log(c))*x + 3*d*log(c))*log((e*x + d)^
n))/(e*x^5 + d*x^4), x)) - 1/3*b*f*log((e*x + d)^n*c)/x^3 - 1/3*a*g*log((e*
x + d)^n*c)/x^3 - 1/3*a*f/x^3
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{bg\log\left(\left(ex+d\right)^n c\right)^2+af+\left(bf+ag\right)\log\left(\left(ex+d\right)^n c\right)}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="f
ricas")
```

```
[Out] integral((b*g*log((e*x + d)^n*c)^2 + a*f + (b*f + a*g)*log((e*x + d)^n*c))/
x^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d + ex\right)^{n}\right)\right)\left(f + g\log\left(c\left(d + ex\right)^{n}\right)\right)}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(c*(e*x+d)**n))/x**4,x)
```

```
[Out] Integral((a + b*log(c*(d + e*x)**n))*(f + g*log(c*(d + e*x)**n))/x**4, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex + d)^{n}c\right) + a\right)\left(g\log\left((ex + d)^{n}c\right) + f\right)}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(c*(e*x+d)^n))/x^4,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((e*x + d)^n*c) + f)/x^4, x)
```

3.386 $\int x^3 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(i+jx)^m\right)\right) dx$

Optimal. Leaf size=742

$$-\frac{bd^4gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{4e^4}-\frac{bgi^4mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{4j^4}+\frac{1}{4}x^4(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)-$$

```
[Out] (a*g*i^3*m*x)/(4*j^3) + (b*d^3*f*n*x)/(4*e^3) - (5*b*d^3*g*m*n*x)/(16*e^3)
- (5*b*g*i^3*m*n*x)/(16*j^3) - (5*b*d*g*i^2*m*n*x)/(24*e*j^2) - (5*b*d^2*g*
i*m*n*x)/(24*e^2*j) + (3*b*d^2*g*m*n*x^2)/(32*e^2) + (3*b*g*i^2*m*n*x^2)/(3
2*j^2) + (b*d*g*i*m*n*x^2)/(12*e*j) - (7*b*d*g*m*n*x^3)/(144*e) - (7*b*g*i*
m*n*x^3)/(144*j) + (b*g*m*n*x^4)/32 + (b*d^4*g*m*n*Log[d + e*x])/(16*e^4) +
 (b*d^2*g*i^2*m*n*Log[d + e*x])/(8*e^2*j^2) + (b*d^3*g*i*m*n*Log[d + e*x])/
(12*e^3*j) + (b*g*i^3*m*(d + e*x)*Log[c*(d + e*x)^n])/(4*e*j^3) - (g*i^2*m*
x^2*(a + b*Log[c*(d + e*x)^n]))/(8*j^2) + (g*i*m*x^3*(a + b*Log[c*(d + e*x)
^n]))/(12*j) - (g*m*x^4*(a + b*Log[c*(d + e*x)^n]))/16 + (b*g*i^4*m*n*Log[i
 + j*x])/(16*j^4) + (b*d*g*i^3*m*n*Log[i + j*x])/(12*e*j^3) + (b*d^2*g*i^2*
m*n*Log[i + j*x])/(8*e^2*j^2) - (g*i^4*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(i + j*x))/(e*i - d*j)])/(4*j^4) + (b*d^3*g*n*(i + j*x)*Log[h*(i + j*x)^m])
/(4*e^3*j) - (b*d^2*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(8*e^2) + (b*d*n*x^3*
(f + g*Log[h*(i + j*x)^m]))/(12*e) - (b*n*x^4*(f + g*Log[h*(i + j*x)^m]))/1
6 - (b*d^4*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/
(4*e^4) + (x^4*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/4 - (
b*g*i^4*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^4) - (b*d^4*g*m*
n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/(4*e^4)
```

Rubi [A] time = 0.872177, antiderivative size = 742, normalized size of antiderivative = 1., number of steps used = 35, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$-\frac{bd^4gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{4e^4}-\frac{bgi^4mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{4j^4}+\frac{1}{4}x^4(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)-$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```


```
[Out] (a*g*i^3*m*x)/(4*j^3) + (b*d^3*f*n*x)/(4*e^3) - (5*b*d^3*g*m*n*x)/(16*e^3)
- (5*b*g*i^3*m*n*x)/(16*j^3) - (5*b*d*g*i^2*m*n*x)/(24*e*j^2) - (5*b*d^2*g*
i*m*n*x)/(24*e^2*j) + (3*b*d^2*g*m*n*x^2)/(32*e^2) + (3*b*g*i^2*m*n*x^2)/(3
2*j^2) + (b*d*g*i*m*n*x^2)/(12*e*j) - (7*b*d*g*m*n*x^3)/(144*e) - (7*b*g*i*
m*n*x^3)/(144*j) + (b*g*m*n*x^4)/32 + (b*d^4*g*m*n*Log[d + e*x])/(16*e^4) +
 (b*d^2*g*i^2*m*n*Log[d + e*x])/(8*e^2*j^2) + (b*d^3*g*i*m*n*Log[d + e*x])/
(12*e^3*j) + (b*g*i^3*m*(d + e*x)*Log[c*(d + e*x)^n])/(4*e*j^3) - (g*i^2*m*
x^2*(a + b*Log[c*(d + e*x)^n]))/(8*j^2) + (g*i*m*x^3*(a + b*Log[c*(d + e*x)
^n]))/(12*j) - (g*m*x^4*(a + b*Log[c*(d + e*x)^n]))/16 + (b*g*i^4*m*n*Log[i
 + j*x])/(16*j^4) + (b*d*g*i^3*m*n*Log[i + j*x])/(12*e*j^3) + (b*d^2*g*i^2*
m*n*Log[i + j*x])/(8*e^2*j^2) - (g*i^4*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*
(i + j*x))/(e*i - d*j)])/(4*j^4) + (b*d^3*g*n*(i + j*x)*Log[h*(i + j*x)^m])
/(4*e^3*j) - (b*d^2*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(8*e^2) + (b*d*n*x^3*
(f + g*Log[h*(i + j*x)^m]))/(12*e) - (b*n*x^4*(f + g*Log[h*(i + j*x)^m]))/1
6 - (b*d^4*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/
(4*e^4) + (x^4*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/4 - (
b*g*i^4*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^4) - (b*d^4*g*m*
n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/(4*e^4)
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int x^3 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(386+jx)^m\right)\right) dx = \frac{1}{4}x^4 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(386+jx)^m\right)\right) -$$

$$= \frac{1}{4}x^4 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(386+jx)^m\right)\right) -$$

$$= \frac{1}{4}x^4 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(386+jx)^m\right)\right) -$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{37249gmx^2 (a + b\log(c(d}{2j^2}$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{37249gmx^2 (a + b\log(c(d}{2j^2}$$

$$= \frac{14378114agmx}{j^3} + \frac{bd^3fnx}{4e^3} - \frac{5bd^3gmnx}{16e^3} - \frac{35945285bgr}{2j^3}$$

Mathematica [A] time = 1.21918, size = 605, normalized size = 0.82

$$-72bgmn\left(e^4i^4 - d^4j^4\right)\text{PolyLog}\left(2, \frac{j(d+ex)}{dj-ei}\right) + e\left(j\left(-6gj^3x\left(bn\left(6d^2ex - 12d^3 - 4de^2x^2 + 3e^3x^3\right) - 12ae^3x^3\right)\log\left(h(i+j\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (6*b*n*Log[d + e*x]*(12*e^4*g*i^4*m*Log[i + j*x] - 12*g*(e^4*i^4 - d^4*j^4)
*m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(12*e^3*g*i^3*m + 6*d*e^2*g*i^2*j*m
 + 4*d^2*e*g*i*j^2*m + 3*d^3*j^3*(-4*f + g*m) - 12*d^3*g*j^3*Log[h*(i + j*x
)^m])) + e*(6*g*i*m*(-12*a*e^3*i^3 + b*(3*e^3*i^3 + 4*d*e^2*i^2*j + 6*d^2*e
*i*j^2 + 12*d^3*j^3)*n)*Log[i + j*x] - 6*b*e^3*Log[c*(d + e*x)^n]*(-12*f*j^
4*x^4 + g*j*m*x*(-12*i^3 + 6*i^2*j*x - 4*i*j^2*x^2 + 3*j^3*x^3) + 12*g*i^4*
m*Log[i + j*x] - 12*g*j^4*x^4*Log[h*(i + j*x)^m]) + j*(6*a*e^3*x*(12*f*j^3*
x^3 + g*m*(12*i^3 - 6*i^2*j*x + 4*i*j^2*x^2 - 3*j^3*x^3)) - b*n*(18*d^3*j^3
*(-4*f + 5*g*m)*x + 3*d^2*e*j^2*x*(12*f*j*x + g*m*(20*i - 9*j*x)) + e^3*x*(
18*f*j^3*x^3 + g*m*(90*i^3 - 27*i^2*j*x + 14*i*j^2*x^2 - 9*j^3*x^3)) + 2*d*
e^2*(-12*f*j^3*x^3 + g*m*(36*i^3 + 30*i^2*j*x - 12*i*j^2*x^2 + 7*j^3*x^3)))
 - 6*g*j^3*x*(-12*a*e^3*x^3 + b*n*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^
3*x^3))*Log[h*(i + j*x)^m])) - 72*b*g*(e^4*i^4 - d^4*j^4)*m*n*PolyLog[2, (j
*(d + e*x))/(-(e*i) + d*j)])/(288*e^4*j^4)
```

Maple [C] time = 2.398, size = 4217, normalized size = 5.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^3*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x)

[Out] 1/4*ln(c)*x^4*b*f+1/4*ln(h)*x^4*a*g-1/16/e/j^3*g*i^3*m*b*d*n+1/4/j^4*b*g*i^4*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+1/8*I*ln(c)*Pi*x^4*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*I*ln(c)*Pi*x^4*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/16*x^4*a*g*m-1/16*x^4*b*f*n-1/16*n*b*g*ln((j*x+i)^m)*x^4+1/4*b*ln(c)*g*x^4*ln((j*x+i)^m)+1/16/j^4*g*i^4*m*ln((e*x+d)*j-d*j+e*i)*b*n+1/4/e^4*b*d^4*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))-1/4*a*g*m/j^4*i^4*ln(j*x+i)+1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*x^4*ln((j*x+i)^m)-1/32*I*Pi*x^4*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-5/16*b*d^3*g*m*n*x/e^3-5/16*b*g*i^3*m*n*x/j^3+3/32*b*d^2*g*m*n*x^2/e^2+3/32*b*g*i^2*m*n*x^2/j^2-7/144*b*d*g*m*n*x^3/e-7/144*b*g*i*m*n*x^3/j-1/8*I*Pi*x^4*a*g*csgn(I*h*(j*x+i)^m)^3-1/8*I*Pi*x^4*b*f*csgn(I*c*(e*x+d)^n)^3-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*h*(j*x+i)^m)^3-1/8*I*Pi*x^4*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/8*I*Pi*x^4*b*f*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*x^4*a*f+1/4*a*g*x^4*ln((j*x+i)^m)-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/32*b*g*m*n*x^4+1/4/j^4*b*g*i^4*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/4/e^4*ln(e*x+d)*b*d^4*f*n+1/12/e*x^3*b*d*f*n-1/8/e^2*x^2*b*d^2*f*n+1/12/j*x^3*a*g*i*m-1/8/j^2*x^2*a*g*i^2*m-1/32*I*Pi*x^4*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*I/j^3*Pi*x*b*g*i^3*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*m/j^4*i^4*ln(j*x+i)+1/8*b*d^2*g*i^2*m*n*ln(e*x+d)/e^2/j^2+1/12*b*d^3*g*i*m*n*ln(e*x+d)/e^3/j-1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*h*(j*x+i)^m)^3+1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*c*(e*x+d)^n)^3+1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*h*(j*x+i)^m)^3-1/8*I/j^3*Pi*x*b*g*i^3*m*csgn(I*c*(e*x+d)^n)^3+1/24*I/j*Pi*x^3*b*g*i*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/8*I/j^3*Pi*x*b*g*i^3*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+(1/4*g*b*x^4*ln((j*x+i)^m)-1/48*b*(6*I*Pi*g*j^4*x^4*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-6*I*Pi*g*j^4*x^4*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-6*I*Pi*g*j^4*x^4*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+6*I*Pi*g*j^4*x^4*csgn(I*h*(j*x+i)^m)^3-12*ln(h)*g*j^4*x^4+3*g*j^4*m*x^4-12*f*j^4*x^4-4*g*i*j^3*m*x^3+6*g*i^2*j^2*m*x^2+12*g*i^4*m*ln(j*x+i)-12*g*i^3*j*m*x)/j^4)*ln((e*x+d)^n)-1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^4*ln((j*x+i)^m)+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h*(j*x+i)^m)^3+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h*(j*x+i)^m)^3+1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*I*Pi*x^4*b*f*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I*Pi*x^4*b*f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/32*I*Pi*x^4*b*g*n*csgn(I*h*(j*x+i)^m)^3+1/8*I*Pi*x^4*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/32*I*Pi*x^4*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/8*I*Pi*ln(h)*x^4*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/8*I*Pi*ln(h)*x^4*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/32*I*Pi*x^4*b*g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4/j^3*ln(c)*x*b*g*i^3*m-1/4/e^4*ln(e*x+d)*ln(h)*b*d^4*g*n+1/4/e^3*ln(h)*x*b*d^3*g*n+1/12/e*ln(h)*x^3*b*d*g*n-1/8/e^2*ln(h)*x^2*b*d^2*g*n+1/12/j*ln(c)*x^3*b*g*i*m-1/8/j^2*ln(c)*x^2*b*g*i^2*m-1/4*b*ln(c)*g*m/j^4*i^4*ln(j*x+i)-1/16*ln(h)*x^4*b*g*n+1/4*ln(c)*ln(h)*x^4*b*g-1/16*ln(c)*x^4*b*g*m-1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*g*csgn(I*h*(j*x+i)^m)^3+1/8*I*b

```
*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*x^4*ln((j*x+i)^m)-1/24*I/j*Pi*x^3*b*g
*i*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-3/16/e^3/j*b*d^3*g*i*m
*n-11/96/e^2/j^2*b*d^2*g*i^2*m*n-1/8*I/j^3*Pi*x*b*g*i^3*m*csgn(I*c)*csgn(I*
(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*h)*csgn(I*(j*
x+i)^m)*csgn(I*h*(j*x+i)^m)+1/16*I/e^2*Pi*x^2*b*d^2*g*n*csgn(I*h)*csgn(I*(j
*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4/e^4*b*d^4*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*
j+e*i)/(-d*j+e*i))-205/576/e^4*b*d^4*g*m*n+1/4*a*g*i^3*m*x/j^3+1/4*b*d^3*f*
n*x/e^3+1/8*I/e^3*Pi*x*b*d^3*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/
8*I/e^4*ln(e*x+d)*Pi*b*d^4*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/16*I/e^2*P
i*x^2*b*d^2*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/24*I/e*Pi*x^3*b*d*g*n*csg
n(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/16*I/e^2*Pi*x^2*b*d^2*g*n*csgn(I*(j*
x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/16*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d
)^n)^2*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/24*I/j*Pi*x^
3*b*g*i*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*I*b*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2*g*m/j^4*i^4*ln(j*x+i)-1/8*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+
d)^n)^2*g*m/j^4*i^4*ln(j*x+i)-5/24*b*d*g*i^2*m*n*x/e/j^2-5/24*b*d^2*g*i*m*n
*x/e^2/j+1/12*b*d*g*i*m*n*x^2/e/j+1/16*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^4*g*c
sgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*I*Pi*x^4*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*
(j*x+i)^m)^2-1/8*I*ln(c)*Pi*x^4*b*g*csgn(I*h*(j*x+i)^m)^3-1/8*I*Pi*ln(h)*x^
4*b*g*csgn(I*c*(e*x+d)^n)^3+1/32*I*Pi*x^4*b*g*m*csgn(I*c*(e*x+d)^n)^3+1/12/
e/j^3*g*i^3*m*ln((e*x+d)*j-d*j+e*i)*b*d*n+1/4/e/j^3*ln(e*x+d)*b*d*g*i^3*m*n
+1/4/e^3/j*g*i*m*ln((e*x+d)*j-d*j+e*i)*b*d^3*n+1/8/e^2/j^2*g*i^2*m*ln((e*x+
d)*j-d*j+e*i)*b*d^2*n-1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*c)*csgn(I*c*(e*x+d
)^n)^2-1/16*I/j^2*Pi*x^2*b*g*i^2*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+
1/16*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^4*g*csgn(I*h)*csgn(I*(j*x+i)^
m)*csgn(I*h*(j*x+i)^m)-1/8*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x
+d)^n)*g*x^4*ln((j*x+i)^m)+1/8*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*m/j^4*i^4*ln(
j*x+i)+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^4*g*cs
gn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/16*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)*x^4*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/8*I*Pi*ln(h)
*x^4*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/8*I*ln(c)*Pi*x^4
*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/32*I*Pi*x^4*b*g*n*cs
gn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/32*I*Pi*x^4*b*g*m*csgn(I*c)
*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/24*I/j*Pi*x^3*b*g*i*m*csgn(I*c*(e*
x+d)^n)^3-1/24*I/e*Pi*x^3*b*d*g*n*csgn(I*h*(j*x+i)^m)^3+1/16*I/e^2*Pi*x^2*b
*d^2*g*n*csgn(I*h*(j*x+i)^m)^3+1/16*b*d^4*g*m*n*ln(e*x+d)/e^4-1/4/e^4*n*b*g
*ln((j*x+i)^m)*d^4*ln(e*x+d)+1/12/e*n*b*g*ln((j*x+i)^m)*d*x^3-1/8/e^2*n*b*g
*ln((j*x+i)^m)*x^2*d^2+1/4/e^3*n*b*g*ln((j*x+i)^m)*x*d^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/4*b*f*x^4*log((e*x + d)^n*c) + 1/4*a*g*x^4*log((j*x + i)^m*h) + 1/4*a*f*x
^4 - 1/48*b*e*f*n*(12*d^4*log(e*x + d)/e^5 + (3*e^3*x^4 - 4*d*e^2*x^3 + 6*d
^2*e*x^2 - 12*d^3*x)/e^4) - 1/48*a*g*j*m*(12*i^4*log(j*x + i)/j^5 + (3*j^3*
x^4 - 4*i*j^2*x^3 + 6*i^2*j*x^2 - 12*i^3*x)/j^4) + 1/48*b*g*((12*e^4*i^4*m*
n*log(e*x + d)*log(j*x + i) + (4*e^4*i*j^3*m*x^3 - 6*e^4*i^2*j^2*m*x^2 + 12
*e^4*i^3*j*m*x - 12*e^4*i^4*m*log(j*x + i) - 3*(j^4*m - 4*j^4*log(h))*e^4*x
^4)*log((e*x + d)^n) + (12*e^4*j^4*x^4*log((e*x + d)^n) + 4*d*e^3*j^4*n*x^3
 - 6*d^2*e^2*j^4*n*x^2 + 12*d^3*e*j^4*n*x - 12*d^4*j^4*n*log(e*x + d) - 3*(
e^4*j^4*n - 4*e^4*j^4*log(c))*x^4)*log((j*x + i)^m))/(e^4*j^4) + 48*integra
```

```
te(-1/48*(6*(2*(j^4*m - 4*j^4*log(h))*e^5*log(c) - (j^4*m*n - 2*j^4*n*log(h
))*e^5)*x^5 + (d*e^4*j^4*m*n + (i*j^3*m*n + 12*i*j^3*n*log(h))*e^5 - 12*(4*
e^5*i*j^3*log(h) - (j^4*m - 4*j^4*log(h))*d*e^4)*log(c))*x^4 - 2*(e^5*i^2*j
^2*m*n + d^2*e^3*j^4*m*n + 24*d*e^4*i*j^3*log(c)*log(h))*x^3 + 6*(e^5*i^3*j
*m*n + d^3*e^2*j^4*m*n)*x^2 + 12*(e^5*i^4*m*n + d^4*e*j^4*m*n)*x + 12*(d*e^
4*i^4*m*n - d^5*j^4*m*n + (e^5*i^4*m*n - d^4*e*j^4*m*n)*x)*log(e*x + d))/(e
^5*j^4*x^2 + d*e^4*i*j^3 + (e^5*i*j^3 + d*e^4*j^4)*x), x))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bfx^3\log\left((ex+d)^n c\right)+afx^3+\left(bgx^3\log\left((ex+d)^n c\right)+agx^3\right)\log\left((jx+i)^m h\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b*f*x^3*log((e*x + d)^n*c) + a*f*x^3 + (b*g*x^3*log((e*x + d)^n*c)
 + a*g*x^3)*log((j*x + i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((jx+i)^m h\right)+f\right)x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)*x^3, x)
```

3.387 $\int x^2 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(i+jx)^m\right)\right) dx$

Optimal. Leaf size=558

$$\frac{bd^3gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{3e^3}+\frac{bgi^3mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{3j^3}+\frac{1}{3}x^3(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)+$$

```
[Out] -(a*g*i^2*m*x)/(3*j^2) - (b*d^2*f*n*x)/(3*e^2) + (4*b*d^2*g*m*n*x)/(9*e^2)
+ (4*b*g*i^2*m*n*x)/(9*j^2) + (b*d*g*i*m*n*x)/(3*e*j) - (5*b*d*g*m*n*x^2)/(
36*e) - (5*b*g*i*m*n*x^2)/(36*j) + (2*b*g*m*n*x^3)/27 - (b*d^3*g*m*n*Log[d
+ e*x])/(9*e^3) - (b*d^2*g*i*m*n*Log[d + e*x])/(6*e^2*j) - (b*g*i^2*m*(d +
e*x)*Log[c*(d + e*x)^n])/(3*e*j^2) + (g*i*m*x^2*(a + b*Log[c*(d + e*x)^n]))
/(6*j) - (g*m*x^3*(a + b*Log[c*(d + e*x)^n]))/9 - (b*g*i^3*m*n*Log[i + j*x]
)/(9*j^3) - (b*d*g*i^2*m*n*Log[i + j*x])/(6*e*j^2) + (g*i^3*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(3*j^3) - (b*d^2*g*n*(i + j*x
)*Log[h*(i + j*x)^m])/(3*e^2*j) + (b*d*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(6
*e) - (b*n*x^3*(f + g*Log[h*(i + j*x)^m]))/9 + (b*d^3*n*Log[-((j*(d + e*x))
/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(3*e^3) + (x^3*(a + b*Log[c*(d +
 e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/3 + (b*g*i^3*m*n*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(3*j^3) + (b*d^3*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
- d*j)])/(3*e^3)
```

Rubi [A] time = 0.609394, antiderivative size = 558, normalized size of antiderivative = 1., number of steps used = 29, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$\frac{bd^3gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{3e^3}+\frac{bgi^3mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{3j^3}+\frac{1}{3}x^3(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)+$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```


```
[Out] -(a*g*i^2*m*x)/(3*j^2) - (b*d^2*f*n*x)/(3*e^2) + (4*b*d^2*g*m*n*x)/(9*e^2)
+ (4*b*g*i^2*m*n*x)/(9*j^2) + (b*d*g*i*m*n*x)/(3*e*j) - (5*b*d*g*m*n*x^2)/(
36*e) - (5*b*g*i*m*n*x^2)/(36*j) + (2*b*g*m*n*x^3)/27 - (b*d^3*g*m*n*Log[d
+ e*x])/(9*e^3) - (b*d^2*g*i*m*n*Log[d + e*x])/(6*e^2*j) - (b*g*i^2*m*(d +
e*x)*Log[c*(d + e*x)^n])/(3*e*j^2) + (g*i*m*x^2*(a + b*Log[c*(d + e*x)^n]))
/(6*j) - (g*m*x^3*(a + b*Log[c*(d + e*x)^n]))/9 - (b*g*i^3*m*n*Log[i + j*x]
)/(9*j^3) - (b*d*g*i^2*m*n*Log[i + j*x])/(6*e*j^2) + (g*i^3*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(3*j^3) - (b*d^2*g*n*(i + j*x
)*Log[h*(i + j*x)^m])/(3*e^2*j) + (b*d*n*x^2*(f + g*Log[h*(i + j*x)^m]))/(6
*e) - (b*n*x^3*(f + g*Log[h*(i + j*x)^m]))/9 + (b*d^3*n*Log[-((j*(d + e*x))
/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(3*e^3) + (x^3*(a + b*Log[c*(d +
 e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/3 + (b*g*i^3*m*n*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(3*j^3) + (b*d^3*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
- d*j)])/(3*e^3)
```


Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
```

```
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int x^2 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(387+jx)^m\right)\right) dx = \frac{1}{3}x^3 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(387+jx)^m\right)\right) -$$

$$= \frac{1}{3}x^3 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(387+jx)^m\right)\right) -$$

$$= \frac{1}{3}x^3 (a + b\log(c(d+ex)^n)) \left(f + g\log\left(h(387+jx)^m\right)\right) -$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{129gmx^2 (a + b\log(c(d+ex}{2j}$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{129gmx^2 (a + b\log(c(d+ex}{2j}$$

$$= -\frac{49923agmx}{j^2} - \frac{bd^2fnx}{3e^2} + \frac{4bd^2gmnx}{9e^2} + \frac{66564bgmnx}{j^2} -$$

Mathematica [A] time = 0.921902, size = 492, normalized size = 0.88

$$\frac{36bgmn\left(e^3i^3 - d^3j^3\right)\text{PolyLog}\left(2, \frac{j(d+ex)}{dj-ei}\right) + e\left(j\left(-6gj^2x\left(bn\left(6d^2 - 3dex + 2e^2x^2\right) - 6ae^2x^2\right)\log\left(h(i+jx)^m\right) + 6ae^2x\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (6*b*n*Log[d + e*x]*(-6*e^3*g*i^3*m*Log[i + j*x] + 6*g*(e^3*i^3 - d^3*j^3)*
m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(-6*e^2*g*i^2*m - 3*d*e*g*i*j*m + 2*
d^2*j^2*(3*f - g*m) + 6*d^2*g*j^2*Log[h*(i + j*x)^m])) + e*(6*g*i*m*(6*a*e^
2*i^2 - b*(2*e^2*i^2 + 3*d*e*i*j + 6*d^2*j^2)*n)*Log[i + j*x] + 6*b*e^2*Log
[c*(d + e*x)^n]*(6*f*j^3*x^3 + g*j*m*x*(-6*i^2 + 3*i*j*x - 2*j^2*x^2) + 6*g
*i^3*m*Log[i + j*x] + 6*g*j^3*x^3*Log[h*(i + j*x)^m]) + j*(6*a*e^2*x*(6*f*j
^2*x^2 + g*m*(-6*i^2 + 3*i*j*x - 2*j^2*x^2)) + b*n*(12*d^2*j^2*(-3*f + 4*g*
m)*x + 3*d*e*(6*f*j^2*x^2 + g*m*(12*i^2 + 12*i*j*x - 5*j^2*x^2)) + e^2*x*(-
12*f*j^2*x^2 + g*m*(48*i^2 - 15*i*j*x + 8*j^2*x^2))) - 6*g*j^2*x*(-6*a*e^2*
x^2 + b*n*(6*d^2 - 3*d*e*x + 2*e^2*x^2))*Log[h*(i + j*x)^m])) + 36*b*g*(e^3
*i^3 - d^3*j^3)*m*n*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)])/(108*e^3*j^3)
```

Maple [C] time = 1.842, size = 3680, normalized size = 6.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] 1/3*a*f*x^3-1/6*I*Pi*x^3*a*g*csgn(I*h*(j*x+i)^m)^3-1/9*n*b*f*x^3+1/6*I*Pi*b
*f*x^3*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I*Pi*b*f*x^3*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2-1/9*ln(h)*x^3*b*g*n+1/3*ln(c)*ln(h)*x^3*b*g-1/9*ln(c)*
x^3*b*g*m+1/3*a*g*x^3*ln((j*x+i)^m)+1/3*ln(c)*b*f*x^3-1/12*I/j*Pi*x^2*b*g*i
*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/3*ln(h)*x^3*a*g-1/3/e^
```

3*b*d^3*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))+1/6*I*ln(c)*Pi*x^3*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/6*I*Pi*ln(h)*x^3*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/6*I*Pi*x^3*a*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/18*I*Pi*x^3*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/6*I*Pi*b*f*x^3*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/3/j^3*b*g*i^3*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+1/3*a*g/j^3*m*i^3*ln(j*x+i)-1/9*x^3*a*g*m+1/6/j*x^2*a*g*i*m-1/3/e^2*n*b*g*ln((j*x+i)^m)*x*d^2+1/6*I*Pi*ln(h)*x^3*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2+1/3*b*d*g*i*m*n*x/e/j+1/18*I*Pi*x^3*b*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/6*I*Pi*ln(h)*x^3*b*g*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I*ln(c)*Pi*x^3*b*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*x^3*ln((j*x+i)^m)+1/6/e*b*d*f*n*x^2+1/3/e^3*ln(e*x+d)*b*d^3*f*n-1/6*I*Pi*b*f*x^3*csgn(I*c*(e*x+d)^n)^3+2/9/e^2/j*g*i*m*b*d^2*n+1/6*I*ln(c)*Pi*x^3*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/18*I*Pi*x^3*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+2/27*b*g*m*n*x^3-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h*(j*x+i)^m)^3-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/3/j^3*b*g*i^3*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))+(1/3*g*b*x^3*ln((j*x+i)^m)+1/18*b*(-3*I*Pi*g*j^3*x^3*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+3*I*Pi*g*j^3*x^3*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+3*I*Pi*g*j^3*x^3*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-3*I*Pi*g*j^3*x^3*csgn(I*h*(j*x+i)^m)^3+6*ln(h)*g*j^3*x^3-2*g*j^3*m*x^3+6*f*j^3*x^3+3*g*i*j^2*m*x^2+6*g*i^3*m*ln(j*x+i)-6*g*i^2*j*m*x)/j^3)*ln((e*x+d)^n)-1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g/j^3*m*i^3*ln(j*x+i)+49/108/e^3*b*d^3*g*m*n-1/18*I*Pi*x^3*b*g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2-1/18*I*Pi*x^3*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/3/e/j^2*ln(e*x+d)*b*d*g*i^2*m*n-1/6/e/j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*d*n-1/3/e^2/j*g*i*m*ln((e*x+d)*j-d*j+e*i)*b*d^2*n+1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/6*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g/j^3*m*i^3*ln(j*x+i)-1/6*b*d^2*g*i*m*n*ln(e*x+d)/e^2/j-1/3/j^2*ln(c)*x*b*g*i^2*m-1/9/j^3*g*i^3*m*ln((e*x+d)*j-d*j+e*i)*b*n-1/3/e^3*b*d^3*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h*(j*x+i)^m)^3+1/3/e^3*ln(e*x+d)*ln(h)*b*d^3*g*n+1/6/e*ln(h)*x^2*b*d*g*n-1/3/e^2*ln(h)*x*b*d^2*g*n+1/6/j*ln(c)*x^2*b*g*i*m+1/3*b*ln(c)*g/j^3*m*i^3*ln(j*x+i)-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/j^3*m*i^3*ln(j*x+i)-1/9*n*b*g*ln((j*x+i)^m)*x^3+1/3*b*ln(c)*g*x^3*ln((j*x+i)^m)+1/6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*x^3*ln((j*x+i)^m)+1/6*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*x^3*ln((j*x+i)^m)+1/6*I*Pi*x^3*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/6*I*Pi*x^3*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/12*I/e*Pi*x^2*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*c*(e*x+d)^n)^3+1/6*I/j^2*Pi*x*b*g*i^2*m*csgn(I*c*(e*x+d)^n)^3+1/18*I*Pi*x^3*b*g*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/9/e/j^2*b*d*g*i^2*m*n+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/3*a*g*i^2*m*x/j^2-1/3*b*d^2*f*n*x/e^2-1/12*I

```
/e*Pi*x^2*b*d*g*n*csgn(I*h*(j*x+i)^m)^3+1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h*(
j*x+i)^m)^3-1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*h*(j*x+i)^m)^3-1/6*I*ln
(c)*Pi*x^3*b*g*csgn(I*h*(j*x+i)^m)^3-1/6*I*Pi*ln(h)*x^3*b*g*csgn(I*c*(e*x+d
)^n)^3+1/18*I*Pi*x^3*b*g*m*csgn(I*c*(e*x+d)^n)^3+1/18*I*Pi*x^3*b*g*n*csgn(I
*h*(j*x+i)^m)^3-1/6*I/e^3*ln(e*x+d)*Pi*b*d^3*g*n*csgn(I*h)*csgn(I*(j*x+i)^m
)*csgn(I*h*(j*x+i)^m)-1/12*I/e*Pi*x^2*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*c
sgn(I*h*(j*x+i)^m)+1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csg
n(I*h*(j*x+i)^m)+1/3/e^3*n*b*g*ln((j*x+i)^m)*d^3*ln(e*x+d)+1/6/e*n*b*g*ln((
j*x+i)^m)*x^2*d-1/6*I/e^2*Pi*x*b*d^2*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/
6*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g/j^3*m*i^3*ln(j*x+i)+1/12*I/e*Pi*
x^2*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/6*I/e^2*Pi*x*b*d^2*g*
n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/12*I/j*Pi*x^2*b*g*i*m*csgn(I*c)
*csgn(I*c*(e*x+d)^n)^2-1/6*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*x^3*ln((j*x+i)^m)
+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)
^m)^2+1/12*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h*(j*x+i)^m)
^3+1/12*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x^3*g*csgn(I*h*(j*x+
i)^m)^3+1/12*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^
m)^2+4/9*b*d^2*g*m*n*x/e^2+4/9*b*g*i^2*m*n*x/j^2-5/36*b*d*g*m*n*x^2/e-5/36*
b*g*i*m*n*x^2/j-1/9*b*d^3*g*m*n*ln(e*x+d)/e^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/3*b*f*x^3*log((e*x + d)^n*c) + 1/3*a*g*x^3*log((j*x + i)^m*h) + 1/3*a*f*x
^3 + 1/18*b*e*f*n*(6*d^3*log(e*x + d)/e^4 - (2*e^2*x^3 - 3*d*e*x^2 + 6*d^2*
x)/e^3) + 1/18*a*g*j*m*(6*i^3*log(j*x + i)/j^4 - (2*j^2*x^3 - 3*i*j*x^2 + 6
*i^2*x)/j^3) - 1/18*b*g*((6*e^3*i^3*m*n*log(e*x + d)*log(j*x + i) - (3*e^3*
i*j^2*m*x^2 - 6*e^3*i^2*j*m*x + 6*e^3*i^3*m*log(j*x + i) - 2*(j^3*m - 3*j^3
*log(h))*e^3*x^3)*log((e*x + d)^n) - (6*e^3*j^3*x^3*log((e*x + d)^n) + 3*d*
e^2*j^3*n*x^2 - 6*d^2*e*j^3*n*x + 6*d^3*j^3*n*log(e*x + d) - 2*(e^3*j^3*n -
 3*e^3*j^3*log(c))*x^3)*log((j*x + i)^m))/(e^3*j^3) + 18*integrate(1/18*(2*
(3*(j^3*m - 3*j^3*log(h))*e^4*log(c) - (2*j^3*m*n - 3*j^3*n*log(h))*e^4)*x^
4 + (d*e^3*j^3*m*n + (i*j^2*m*n + 6*i*j^2*n*log(h))*e^4 - 6*(3*e^4*i*j^2*lo
g(h) - (j^3*m - 3*j^3*log(h))*d*e^3)*log(c))*x^3 - 3*(e^4*i^2*j*m*n + d^2*e
^2*j^3*m*n + 6*d*e^3*i*j^2*log(c)*log(h))*x^2 - 6*(e^4*i^3*m*n + d^3*e*j^3*
m*n)*x - 6*(d*e^3*i^3*m*n - d^4*j^3*m*n + (e^4*i^3*m*n - d^3*e*j^3*m*n)*x)*
log(e*x + d))/(e^4*j^3*x^2 + d*e^3*i*j^2 + (e^4*i*j^2 + d*e^3*j^3)*x), x))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bfx^2\log\left((ex+d)^n c\right) + afx^2 + \left(bgx^2\log\left((ex+d)^n c\right) + agx^2\right)\log\left((jx+i)^m h\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b*f*x^2*log((e*x + d)^n*c) + a*f*x^2 + (b*g*x^2*log((e*x + d)^n*c)
 + a*g*x^2)*log((j*x + i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((jx+i)^m h\right)+f\right)x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)*x^2, x)
```

3.388 $\int x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)dx$

Optimal. Leaf size=397

$$-\frac{bd^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2e^2}-\frac{bgi^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2j^2}+\frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)-$$

```
[Out] (a*g*i*m*x)/(2*j) + (b*d*f*n*x)/(2*e) - (3*b*d*g*m*n*x)/(4*e) - (3*b*g*i*m*
n*x)/(4*j) + (b*g*m*n*x^2)/4 + (b*d^2*g*m*n*Log[d + e*x])/(4*e^2) + (b*g*i*
m*(d + e*x)*Log[c*(d + e*x)^n])/(2*e*j) - (g*m*x^2*(a + b*Log[c*(d + e*x)^n
]))/4 + (b*g*i^2*m*n*Log[i + j*x])/(4*j^2) - (g*i^2*m*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*j^2) + (b*d*g*n*(i + j*x)*Log[h*(i
 + j*x)^m])/(2*e*j) - (b*n*x^2*(f + g*Log[h*(i + j*x)^m]))/4 - (b*d^2*n*Log
[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(2*e^2) + (x^2*(
a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/2 - (b*g*i^2*m*n*Poly
Log[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2) - (b*d^2*g*m*n*PolyLog[2, (e*
(i + j*x))/(e*i - d*j)])/(2*e^2)
```

Rubi [A] time = 0.433456, antiderivative size = 397, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2439, 43, 2416, 2389, 2295, 2395, 2394, 2393, 2391}

$$-\frac{bd^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2e^2}-\frac{bgi^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2j^2}+\frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)-$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (a*g*i*m*x)/(2*j) + (b*d*f*n*x)/(2*e) - (3*b*d*g*m*n*x)/(4*e) - (3*b*g*i*m*
n*x)/(4*j) + (b*g*m*n*x^2)/4 + (b*d^2*g*m*n*Log[d + e*x])/(4*e^2) + (b*g*i*
m*(d + e*x)*Log[c*(d + e*x)^n])/(2*e*j) - (g*m*x^2*(a + b*Log[c*(d + e*x)^n
]))/4 + (b*g*i^2*m*n*Log[i + j*x])/(4*j^2) - (g*i^2*m*(a + b*Log[c*(d + e*x
)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*j^2) + (b*d*g*n*(i + j*x)*Log[h*(i
 + j*x)^m])/(2*e*j) - (b*n*x^2*(f + g*Log[h*(i + j*x)^m]))/4 - (b*d^2*n*Log
[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log[h*(i + j*x)^m]))/(2*e^2) + (x^2*(
a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/2 - (b*g*i^2*m*n*Poly
Log[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2) - (b*d^2*g*m*n*PolyLog[2, (e*
(i + j*x))/(e*i - d*j)])/(2*e^2)
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(388+jx)^m\right)\right)dx = \frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(388+jx)^m\right)\right)-$$

$$=\frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(388+jx)^m\right)\right)-$$

$$=\frac{1}{2}x^2(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(388+jx)^m\right)\right)-$$

$$=\frac{194agmx}{j}+\frac{bdfnx}{2e}-\frac{1}{4}gmx^2(a+b\log(c(d+ex)^n))-$$

$$=\frac{194agmx}{j}+\frac{bdfnx}{2e}-\frac{1}{4}gmx^2(a+b\log(c(d+ex)^n))-$$

$$=\frac{194agmx}{j}+\frac{bdfnx}{2e}-\frac{3bdgmnx}{4e}-\frac{291bgmnx}{j}+\frac{1}{4}bgmnx$$

Mathematica [A] time = 0.637675, size = 341, normalized size = 0.86

$$2bgmn\left(d^2j^2-e^2i^2\right)\text{PolyLog}\left(2,\frac{j(d+ex)}{dj-ei}\right)+e\left(j\left(gjx(2aex+bn(2d-ex))\log\left(h(i+jx)^m\right)+aex(2fjx+gm(2i-jx))-b\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (b*n*Log[d + e*x]*(2*e^2*g*i^2*m*Log[i + j*x] + 2*g*(-(e^2*i^2) + d^2*j^2)*
m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(-2*d*f*j + 2*e*g*i*m + d*g*j*m - 2*
d*g*j*Log[h*(i + j*x)^m])) + e*(g*i*m*(-2*a*e*i + b*(e*i + 2*d*j)*n)*Log[i
+ j*x] + j*(a*e*x*(2*f*j*x + g*m*(2*i - j*x)) - b*n*(e*x*(3*g*i*m + f*j*x -
 g*j*m*x) + d*(2*g*i*m - 2*f*j*x + 3*g*j*m*x)) + g*j*x*(2*a*e*x + b*n*(2*d
- e*x))*Log[h*(i + j*x)^m]) + b*e*Log[c*(d + e*x)^n]*(-2*g*i^2*m*Log[i + j*
x] + j*x*(2*g*i*m + 2*f*j*x - g*j*m*x + 2*g*j*x*Log[h*(i + j*x)^m]))) + 2*b
*g*(-(e^2*i^2) + d^2*j^2)*m*n*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)])/(4*
e^2*j^2)
```

Maple [C] time = 1.639, size = 3163, normalized size = 8.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] -1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*x^2*g*csgn(I*h*(j*x+i)^m)^3+1/8*I*Pi*x^2*
b*g*n*csgn(I*h*(j*x+i)^m)^3-1/4*x^2*n*b*f+1/2*a*f*x^2+1/2*ln(h)*x^2*a*g+1/2
*ln(c)*b*f*x^2-1/4*I*ln(c)*Pi*x^2*b*g*csgn(I*h*(j*x+i)^m)^3-1/4*I*Pi*ln(h)*
x^2*b*g*csgn(I*c*(e*x+d)^n)^3+(1/2*g*b*x^2*ln((j*x+i)^m)-1/4*b*(I*Pi*g*j^2*
x^2*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-I*Pi*g*j^2*x^2*csgn(I*h
)*csgn(I*h*(j*x+i)^m)^2-I*Pi*g*j^2*x^2*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m
)^2+I*Pi*g*j^2*x^2*csgn(I*h*(j*x+i)^m)^3-2*ln(h)*g*j^2*x^2+g*j^2*m*x^2+2*g*
```

i^2*m*ln(j*x+i)-2*f*j^2*x^2-2*g*i*j*m*x)/j^2)*ln((e*x+d)^n)-1/8*b*Pi^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I*h*(j*x+i)^m)^3-1/4
*a*g*m*x^2-1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g/j^2*m*i^2*l
n(j*x+i)+1/2/j^2*b*g*i^2*m*n*ln(j*x+i)*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/
4/e/j*g*i*m*b*d*n-5/8/e^2*b*d^2*g*m*n+1/4*I*Pi*ln(h)*x^2*b*g*csgn(I*c)*csgn
(I*c*(e*x+d)^n)^2+1/4*I*Pi*ln(h)*x^2*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)
^n)^2-1/8*I*Pi*x^2*b*g*m*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*c
sgn(I*c)*csgn(I*c*(e*x+d)^n)^2+1/4*I*Pi*b*f*x^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2-1/2*m*a*g*i^2/j^2*ln(j*x+i)+1/4*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(
I*c*(e*x+d)^n)^2*g*x^2*ln((j*x+i)^m)+1/4*I*ln(c)*Pi*x^2*b*g*csgn(I*(j*x+i)^
m)*csgn(I*h*(j*x+i)^m)^2-1/8*I*Pi*x^2*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x
+i)^m)^2-1/4*I*Pi*b*f*x^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1
/4*b*g*m*n*x^2+1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g/j^2*m*i^2*ln(j*x+i)-1/4*I
/e*Pi*x*b*d*g*n*csgn(I*h*(j*x+i)^m)^3+1/8*I*Pi*x^2*b*g*m*csgn(I*c)*csgn(I*(
e*x+d)^n)*csgn(I*c*(e*x+d)^n)-1/2*b*ln(c)*g/j^2*m*i^2*ln(j*x+i)+1/2/e*ln(h)
*x*b*d*g*n-1/2/e^2*ln(e*x+d)*ln(h)*b*d^2*g*n+1/2/j*ln(c)*x*b*g*i*m+1/2*a*g*
x^2*ln((j*x+i)^m)-1/2/e^2*ln(e*x+d)*b*d^2*f*n-1/4*I*Pi*b*f*x^2*csgn(I*c*(e*
x+d)^n)^3-1/2/e^2*n*b*g*ln((j*x+i)^m)*d^2*ln(e*x+d)+1/8*I*Pi*x^2*b*g*m*csgn
(I*c*(e*x+d)^n)^3-1/4*n*b*g*ln((j*x+i)^m)*x^2+1/2*b*ln(c)*g*x^2*ln((j*x+i)^
m)-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h)*csgn(I*h*(j*x
+i)^m)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*(j*x+i)^m)
*csgn(I*h*(j*x+i)^m)^2-1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x
^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2*x^2*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/4*I*Pi*x^2*a*g
*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*I/j*Pi*x*b*g*i*m*csgn(
I*c)*csgn(I*c*(e*x+d)^n)^2-1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)*x^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*I*Pi*x
^2*b*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*I/e^2*ln(e*x+d
)*Pi*b*d^2*g*n*csgn(I*h*(j*x+i)^m)^3-1/4*I*ln(c)*Pi*x^2*b*g*csgn(I*h)*csgn(
I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/4*I*Pi*x^2*a*g*csgn(I*h*(j*x+i)^m)^3+1/2
/e^2*b*d^2*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))+1/2/e*n*b*g*l
n((j*x+i)^m)*d*x+1/2/e^2*b*d^2*g*m*n*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))+
1/4/j^2*g*i^2*m*ln((e*x+d)*j-d*j+e*i)*b*n-1/4*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*
g*x^2*ln((j*x+i)^m)+1/4*I*Pi*x^2*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/4*I*
Pi*x^2*a*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/2*ln(c)*ln(h)*x^2*b*g-
1/4*ln(c)*x^2*b*g*m-1/4*ln(h)*x^2*b*g*n-1/8*I*Pi*x^2*b*g*n*csgn(I*h)*csgn(I
h(j*x+i)^m)^2+1/4*I*ln(c)*Pi*x^2*b*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/4*
I/j*Pi*x*b*g*i*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)+1/4*I/e^2*
ln(e*x+d)*Pi*b*d^2*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/4*
I/e*Pi*x*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-1/8*I*Pi*x
^2*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2-1/8*b*Pi^2*csgn(I*c*(e*x+d
)^n)^3*x^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/4*I*b*Pi*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2*g*x^2*ln((j*x+i)^m)+1/8*b*Pi^2*csgn(I*c*(e*x+d
)^n)^3*x^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*b*Pi^2*csgn(I*c*(e*x+d)^n)
^3*x^2*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(
I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h*(j*x+i)^m)^3+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*c
sgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h*(j*x+i)^m)^3+1/2*a*g*i*m*x/j+1/2*b*d*f*
n*x/e+1/2/j^2*b*g*i^2*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-1/4*I/e^2*ln
(e*x+d)*Pi*b*d^2*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2-1/4*I/e^2*ln(e*x+d)*Pi
*b*d^2*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/4*I*b*Pi*csgn(I*c)*csg
n(I*c*(e*x+d)^n)^2*g/j^2*m*i^2*ln(j*x+i)+1/2/e/j*g*i*m*ln((e*x+d)*j-d*j+e*i
)*b*d*n+1/2/e/j*ln(e*x+d)*b*d*g*i*m*n+1/8*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n
)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/8*b*Pi^2*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x^2*g*csgn(I*(j*x+i)^m)*csgn(I*
h*(j*x+i)^m)^2+1/8*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x^2*g*csgn(I*h)*c
sgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+1/8*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*
(e*x+d)^n)^2*x^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)-3/4*b*d*
g*m*n*x/e-3/4*b*g*i*m*n*x/j-1/4*I*Pi*ln(h)*x^2*b*g*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)-1/4*I/j*Pi*x*b*g*i*m*csgn(I*c*(e*x+d)^n)^3-1/4*I*b*

```
Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*x^2*ln((j*x+i)^m)+1/4*
b*d^2*g*m*n*ln(e*x+d)/e^2+1/4*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)*g/j^2*m*i^2*ln(j*x+i)+1/4*I/j*Pi*x*b*g*i*m*csgn(I*(e*x+d)^n)*csgn
(I*c*(e*x+d)^n)^2+1/4*I/e*Pi*x*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1/4*
I/e*Pi*x*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{4}\,befn\left(\frac{2\,d^2\log\left(ex+d\right)}{e^3}+\frac{ex^2-2\,dx}{e^2}\right)-\frac{1}{4}\,agjm\left(\frac{2\,i^2\log\left(jx+i\right)}{j^3}+\frac{jx^2-2\,ix}{j^2}\right)+\frac{1}{2}\,bfx^2\log\left(\left(ex+d\right)^nc\right)+\frac{1}{2}\,agx^2\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] -1/4*b*e*f*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) - 1/4*a*g*j*m*(
2*i^2*log(j*x + i)/j^3 + (j*x^2 - 2*i*x)/j^2) + 1/2*b*f*x^2*log((e*x + d)^n
*c) + 1/2*a*g*x^2*log((j*x + i)^m*h) + 1/2*a*f*x^2 + 1/4*b*g*((2*e^2*i^2*m*
n*log(e*x + d)*log(j*x + i) + (2*e^2*i*j*m*x - 2*e^2*i^2*m*log(j*x + i) - (
j^2*m - 2*j^2*log(h))*e^2*x^2)*log((e*x + d)^n) + (2*e^2*j^2*x^2*log((e*x +
 d)^n) + 2*d*e*j^2*n*x - 2*d^2*j^2*n*log(e*x + d) - (e^2*j^2*n - 2*e^2*j^2*
log(c))*x^2)*log((j*x + i)^m))/(e^2*j^2) + 4*integrate(-1/4*(2*((j^2*m - 2*
j^2*log(h))*e^3*log(c) - (j^2*m*n - j^2*n*log(h))*e^3)*x^3 + (d*e^2*j^2*m*n
 + (i*j*m*n + 2*i*j*n*log(h))*e^3 - 2*(2*e^3*i*j*log(h) - (j^2*m - 2*j^2*lo
g(h))*d*e^2)*log(c))*x^2 + 2*(e^3*i^2*m*n + d^2*e*j^2*m*n - 2*d*e^2*i*j*log
(c)*log(h))*x + 2*(d*e^2*i^2*m*n - d^3*j^2*m*n + (e^3*i^2*m*n - d^2*e*j^2*m
*n)*x)*log(e*x + d))/(e^3*j^2*x^2 + d*e^2*i*j + (e^3*i*j + d*e^2*j^2)*x), x
))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bfx\log\left(\left(ex+d\right)^nc\right)+afx+\left(bgx\log\left(\left(ex+d\right)^nc\right)+agx\right)\log\left(\left(jx+i\right)^mh\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] integral(b*f*x*log((e*x + d)^n*c) + a*f*x + (b*g*x*log((e*x + d)^n*c) + a*g
*x)*log((j*x + i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left(\left(jx+i\right)^m h\right)+f\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)*x, x)
```

3.389 $\int (a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)dx$

Optimal. Leaf size=232

$$\frac{bgimn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{j}+\frac{bdgmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{e}+x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)+\frac{gim\,\text{l}}{}$$

```
[Out] -(a*g*m*x) - b*f*n*x + 2*b*g*m*n*x - (b*g*m*(d + e*x)*Log[c*(d + e*x)^n])/e
 + (g*i*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j - (b
*g*n*(i + j*x)*Log[h*(i + j*x)^m])/j + (b*d*n*Log[-((j*(d + e*x))/(e*i - d*
j))]*(f + g*Log[h*(i + j*x)^m]))/e + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Lo
g[h*(i + j*x)^m]) + (b*g*i*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j
+ (b*d*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e
```

Rubi [A] time = 0.284739, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {2430, 43, 2416, 2389, 2295, 2394, 2393, 2391}

$$\frac{bgimn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{j}+\frac{bdgmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{e}+x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)+\frac{gim\,\text{l}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```


```
[Out] -(a*g*m*x) - b*f*n*x + 2*b*g*m*n*x - (b*g*m*(d + e*x)*Log[c*(d + e*x)^n])/e
 + (g*i*m*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j - (b
*g*n*(i + j*x)*Log[h*(i + j*x)^m])/j + (b*d*n*Log[-((j*(d + e*x))/(e*i - d*
j))]*(f + g*Log[h*(i + j*x)^m]))/e + x*(a + b*Log[c*(d + e*x)^n])*(f + g*Lo
g[h*(i + j*x)^m]) + (b*g*i*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j
+ (b*d*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e
```


Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))\left(f+g\log\left(h(389+jx)^m\right)\right)dx = x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(389+jx)^m\right)\right)-(gjm)\int$$

$$= x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(389+jx)^m\right)\right)-(gjm)\int$$

$$= x(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(389+jx)^m\right)\right)-(gm)\int$$

$$= -agmx-bfnx+\frac{389gm(a+b\log(c(d+ex)^n))\log\left(\frac{e(389+jx)}{389e-dj}\right)}{j}$$

$$= -agmx-bfnx+\frac{389gm(a+b\log(c(d+ex)^n))\log\left(\frac{e(389+jx)}{389e-dj}\right)}{j}$$

$$= -agmx-bfnx+2bgmnx-\frac{bgm(d+ex)\log(c(d+ex)^n)}{e}+$$

Mathematica [A] time = 0.226182, size = 329, normalized size = 1.42

$$bgmn(ei-dj)\text{PolyLog}\left(2,\frac{j(d+ex)}{dj-ei}\right)+aefjx+aegjx\log\left(h(i+jx)^m\right)+aegim\log(i+jx)-aegjmx+befjx\log(c(d+ex)^n)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-(b*d*f*j*n) + b*d*g*j*m*n + a*e*f*j*x - a*e*g*j*m*x - b*e*f*j*n*x + 2*b*e
*g*j*m*n*x + b*e*f*j*x*Log[c*(d + e*x)^n] - b*e*g*j*m*x*Log[c*(d + e*x)^n]
+ a*e*g*i*m*Log[i + j*x] - b*e*g*i*m*n*Log[i + j*x] + b*d*g*j*m*n*Log[i + j
*x] + b*e*g*i*m*Log[c*(d + e*x)^n]*Log[i + j*x] - b*d*g*j*n*Log[h*(i + j*x)
^m] + a*e*g*j*x*Log[h*(i + j*x)^m] - b*e*g*j*n*x*Log[h*(i + j*x)^m] + b*e*g
*j*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + b*n*Log[d + e*x]*(-(e*g*i*m*Lo
g[i + j*x]) + g*(e*i - d*j)*m*Log[(e*(i + j*x))/(e*i - d*j)] + d*j*(f - g*m
 + g*Log[h*(i + j*x)^m])) + b*g*(e*i - d*j)*m*n*PolyLog[2, (j*(d + e*x))/(-
(e*i) + d*j)])/(e*j)
```

Maple [C] time = 1.346, size = 2544, normalized size = 11.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] 1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*m/j*i*ln(j*x+i)+1/e*b*d*g*m*n+
b*f/e*n*d*ln(e*x+d)+b*ln(c)*g*x*ln((j*x+i)^m)+1/2*I*Pi*b*g*n*csgn(I*h*(j*x+
i)^m)^3*x-1/2*I*ln(c)*Pi*b*g*csgn(I*h*(j*x+i)^m)^3*x+1/e*n*b*g*ln((j*x+i)^m
)*d*ln(e*x+d)+ln(c)*ln(h)*b*g*x-ln(c)*b*g*m*x-ln(h)*b*g*n*x+x*a*f-1/4*b*Pi^
2*csgn(I*c*(e*x+d)^n)^3*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x
+1/4*b*Pi^2*csgn(I*c*(e*x+d)^n)^3*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2
*x+1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h*(j*x+i)^m)^3*x+1/2
*I*Pi*b*g*m*csgn(I*c*(e*x+d)^n)^3*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*
csgn(I*c*(e*x+d)^n)*g*m/j*i*ln(j*x+i)-1/e*ln(e*x+d)*b*d*g*m*n-1/e*b*d*g*m*n
*dilog(((e*x+d)*j-d*j+e*i)/(-d*j+e*i))-g*i*m/j*ln((e*x+d)*j-d*j+e*i)*b*n+a*
g*x*ln((j*x+i)^m)+ln(h)*a*g*x+ln(c)*b*f*x+1/2*I*b*Pi*csgn(I*c)*csgn(I*c*(e*
x+d)^n)^2*g*x*ln((j*x+i)^m)-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/4*b*Pi^2*csgn(I*c)*csgn(I*c*(e*x+
d)^n)^2*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x-1/j*b*g*i*m*n*ln(j*x+i)
*ln(((j*x+i)*e+d*j-e*i)/(d*j-e*i))-a*g*m*x-b*f*n*x-n*b*g*ln((j*x+i)^m)*x+1/
2*I*b*Pi*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*m/j*i*ln(j*x+i)-1/4*b*Pi
^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn(I*h)*csgn(I*(j*x+
i)^m)*csgn(I*h*(j*x+i)^m)*x-1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n
)^2*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x+(b*x*g*ln((j*x+i)^m)+1/2*b*
(-I*Pi*g*j*x*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)+I*Pi*g*j*x*csg
n(I*h)*csgn(I*h*(j*x+i)^m)^2+I*Pi*g*j*x*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^
m)^2-I*Pi*g*j*x*csgn(I*h*(j*x+i)^m)^3+2*g*i*m*ln(j*x+i)+2*ln(h)*g*j*x-2*x*g
*m*j+2*f*j*x)/j)*ln((e*x+d)^n)+1/e*ln(e*x+d)*ln(h)*b*d*g*n+1/2*I*Pi*b*f*csg
n(I*c)*csgn(I*c*(e*x+d)^n)^2*x+2*b*g*m*n*x-1/2*I*Pi*b*g*m*csgn(I*c)*csgn(I*
c*(e*x+d)^n)^2*x-1/2*I*Pi*b*g*m*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x-1
/2*I*Pi*b*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x+b*ln(c)*g*m/j*i*ln(j*x+i)+1
/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h*(j*x+i)^m)^3*x
-1/2*I*Pi*b*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x-1/2*I*Pi*b*f*csgn
(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+1/2*I*ln(c)*Pi*b*g*csgn(I*h)*
csgn(I*h*(j*x+i)^m)^2*x+1/2*I*ln(c)*Pi*b*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+
i)^m)^2*x+1/2*I*Pi*ln(h)*b*g*csgn(I*c)*csgn(I*c*(e*x+d)^n)^2*x+1/2*I*Pi*ln(
h)*b*g*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x-1/2*I*Pi*a*g*csgn(I*h)*csg
n(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I*Pi*ln(h)*b*g*csgn(I*c*(e*x+d)^n)
^3*x+1/2*I*Pi*a*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x+1/4*b*Pi^2*csgn(I*c*(e*
x+d)^n)^3*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x-1/4*b*Pi^2*csgn(I*c*(e*x+d)^n
)^3*g*csgn(I*h*(j*x+i)^m)^3*x-1/2*I*Pi*a*g*csgn(I*h*(j*x+i)^m)^3*x-1/2*I*Pi
*b*f*csgn(I*c*(e*x+d)^n)^3*x-1/e*b*d*g*m*n*ln(e*x+d)*ln(((e*x+d)*j-d*j+e*i)
```

```
/(-d*j+e*i))+1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2+1
/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2-1/2*I*b
*Pi*csgn(I*c*(e*x+d)^n)^3*g*x*ln((j*x+i)^m)+a*g*m/j*i*ln(j*x+i)+1/2*I*Pi*b*
f*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*x-1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*
x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn(I*h*(j*x+i)^m)^3*x-1/4*b*Pi^2*csgn(I*c)*
csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h)*csgn(I*h*(j*x+i)^m)^2*x+1/2*I*b*Pi*csgn(I
*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*x*ln((j*x+i)^m)+1/2*I*Pi*a*g*csgn(I*(j*
x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x-1/j*b*g*i*m*n*dilog(((j*x+i)*e+d*j-e*i)/(d*
j-e*i))-1/2*I/e*ln(e*x+d)*Pi*b*d*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(
j*x+i)^m)+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*g*csgn
(I*h)*csgn(I*h*(j*x+i)^m)^2*x+1/4*b*Pi^2*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I
*c*(e*x+d)^n)*g*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)^2*x+1/4*b*Pi^2*csgn(I
*c)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)
*x+1/4*b*Pi^2*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)^2*g*csgn(I*h)*csgn(I*(j
*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I*b*Pi*csgn(I*c*(e*x+d)^n)^3*g*m/j*i*ln(
j*x+i)+1/2*I*Pi*b*g*m*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(e*x+d)^n)*x+1/2
*I*Pi*b*g*n*csgn(I*h)*csgn(I*(j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I/e*ln(e*
x+d)*Pi*b*d*g*n*csgn(I*h*(j*x+i)^m)^3-1/2*I*ln(c)*Pi*b*g*csgn(I*h)*csgn(I*(
j*x+i)^m)*csgn(I*h*(j*x+i)^m)*x-1/2*I*Pi*ln(h)*b*g*csgn(I*c)*csgn(I*(e*x+d)
^n)*csgn(I*c*(e*x+d)^n)*x-1/2*I*b*Pi*csgn(I*c)*csgn(I*(e*x+d)^n)*csgn(I*c*(
e*x+d)^n)*g*x*ln((j*x+i)^m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-befn\left(\frac{x}{e}-\frac{d\log\left(ex+d\right)}{e^2}\right)-agjm\left(\frac{x}{j}-\frac{i\log\left(jx+i\right)}{j^2}\right)+bfx\log\left(\left(ex+d\right)^nc\right)+agx\log\left(\left(jx+i\right)^mh\right)+afx-bg\left(\frac{eimn\log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="maxim
a")
```

```
[Out] -b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a*g*j*m*(x/j - i*log(j*x + i)/j^2) +
b*f*x*log((e*x + d)^n*c) + a*g*x*log((j*x + i)^m*h) + a*f*x - b*g*((e*i*m*n
*log(e*x + d)*log(j*x + i) - (e*i*m*log(j*x + i) - (j*m - j*log(h))*e*x)*lo
g((e*x + d)^n) - (d*j*n*log(e*x + d) + e*j*x*log((e*x + d)^n) - (e*j*n - e*
j*log(c))*x)*log((j*x + i)^m))/(e*j) + integrate(-(d*e*i*log(c)*log(h) - ((
j*m - j*log(h))*e^2*log(c) - (2*j*m*n - j*n*log(h))*e^2)*x^2 + (d*e*j*m*n +
 (i*m*n - i*n*log(h))*e^2 + (e^2*i*log(h) - (j*m - j*log(h))*d*e)*log(c))*x
 + (d*e*i*m*n - d^2*j*m*n + (e^2*i*m*n - d*e*j*m*n)*x)*log(e*x + d))/(e^2*j
*x^2 + d*e*i + (e^2*i + d*e*j)*x), x))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(bf\log\left(\left(ex+d\right)^nc\right)+af+\left(bg\log\left(\left(ex+d\right)^nc\right)+ag\right)\log\left(\left(jx+i\right)^mh\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="frica
s")
```

```
[Out] integral(b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log(
(j*x + i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left((ex+d)^n c\right)+a\right)\left(g \log \left(\left(jx+i\right)^m h\right)+f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m)),x, algorithm="giac"
)
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f), x)
```

3.390 $\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$

Optimal. Leaf size=637

$$agm\text{PolyLog}\left(2,\frac{jx}{i}+1\right)-bgm\text{PolyLog}\left(2,\frac{jx}{i}+1\right)(n\log(d+ex)-\log(c(d+ex)^n))+bfn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)-bgn\text{P}$$

```
[Out] f*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + b*g*m*n*Log[-((e*x)/d)]*Log[
d + e*x]*Log[i + j*x] - b*g*m*Log[-((j*x)/i)]*(n*Log[d + e*x] - Log[c*(d +
e*x)^n])*Log[i + j*x] + (b*g*m*n*(Log[-((e*x)/d)] + Log[(e*i - d*j)/(e*(i +
 j*x))] - Log[-(((e*i - d*j)*x)/(d*(i + j*x)))])*Log[(d*(i + j*x))/(i*(d +
e*x))]^2)/2 - (b*g*m*n*(Log[-((e*x)/d)] - Log[-((j*x)/i)])*(Log[d + e*x] +
Log[(d*(i + j*x))/(i*(d + e*x))])^2)/2 - b*g*Log[-((e*x)/d)]*Log[c*(d + e*x
)^n]*(m*Log[i + j*x] - Log[h*(i + j*x)^m]) + a*g*Log[-((j*x)/i)]*Log[h*(i +
 j*x)^m] + b*f*n*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*(Log[i + j*x] - Log[(d*(
i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (e*x)/d] - b*g*n*(m*Log[i + j*x] -
 Log[h*(i + j*x)^m])*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*Log[(d*(i + j*x))/(i
*(d + e*x))]*PolyLog[2, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*Log[(d*(i +
j*x))/(i*(d + e*x))]*PolyLog[2, (j*(d + e*x))/(e*(i + j*x))] + a*g*m*PolyLo
g[2, 1 + (j*x)/i] - b*g*m*(n*Log[d + e*x] - Log[c*(d + e*x)^n])*PolyLog[2,
1 + (j*x)/i] + b*g*m*n*(Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*Po
lyLog[2, 1 + (j*x)/i] - b*g*m*n*PolyLog[3, 1 + (e*x)/d] + b*g*m*n*PolyLog[3
, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*PolyLog[3, (j*(d + e*x))/(e*(i + j
*x))] - b*g*m*n*PolyLog[3, 1 + (j*x)/i]
```

Rubi [A] time = 0.432721, antiderivative size = 637, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {2438, 2394, 2315, 2437, 2435}

$$agm\text{PolyLog}\left(2,\frac{jx}{i}+1\right)-bgm\text{PolyLog}\left(2,\frac{jx}{i}+1\right)(n\log(d+ex)-\log(c(d+ex)^n))+bfn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)-bgn\text{P}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x,x]
```


```
[Out] f*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]) + b*g*m*n*Log[-((e*x)/d)]*Log[
d + e*x]*Log[i + j*x] - b*g*m*Log[-((j*x)/i)]*(n*Log[d + e*x] - Log[c*(d +
e*x)^n])*Log[i + j*x] + (b*g*m*n*(Log[-((e*x)/d)] + Log[(e*i - d*j)/(e*(i +
 j*x))] - Log[-(((e*i - d*j)*x)/(d*(i + j*x)))])*Log[(d*(i + j*x))/(i*(d +
e*x))]^2)/2 - (b*g*m*n*(Log[-((e*x)/d)] - Log[-((j*x)/i)])*(Log[d + e*x] +
Log[(d*(i + j*x))/(i*(d + e*x))])^2)/2 - b*g*Log[-((e*x)/d)]*Log[c*(d + e*x
)^n]*(m*Log[i + j*x] - Log[h*(i + j*x)^m]) + a*g*Log[-((j*x)/i)]*Log[h*(i +
 j*x)^m] + b*f*n*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*(Log[i + j*x] - Log[(d*(
i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (e*x)/d] - b*g*n*(m*Log[i + j*x] -
 Log[h*(i + j*x)^m])*PolyLog[2, 1 + (e*x)/d] + b*g*m*n*Log[(d*(i + j*x))/(i
*(d + e*x))]*PolyLog[2, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*Log[(d*(i +
j*x))/(i*(d + e*x))]*PolyLog[2, (j*(d + e*x))/(e*(i + j*x))] + a*g*m*PolyLo
g[2, 1 + (j*x)/i] - b*g*m*(n*Log[d + e*x] - Log[c*(d + e*x)^n])*PolyLog[2,
1 + (j*x)/i] + b*g*m*n*(Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*Po
lyLog[2, 1 + (j*x)/i] - b*g*m*n*PolyLog[3, 1 + (e*x)/d] + b*g*m*n*PolyLog[3
, (i*(d + e*x))/(d*(i + j*x))] - b*g*m*n*PolyLog[3, (j*(d + e*x))/(e*(i + j
*x))] - b*g*m*n*PolyLog[3, 1 + (j*x)/i]
```


Rule 2438

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*(Log[(h_.)*((i_.)
 + (j_.)*(x_))^(m_.)]*(g_.) + (f_)))/(x_), x_Symbol] :> Dist[f, Int[(a + b*
Log[c*(d + e*x)^n])/x, x], x] + Dist[g, Int[(Log[h*(i + j*x)^m]*(a + b*Log[
c*(d + e*x)^n]))/x, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x
] && NeQ[e*i - d*j, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2437

```
Int[(Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*Log[(h_.)*((i_.) + (j_.)*(x_))^(m
_.)])/(x_), x_Symbol] :> Dist[m, Int[(Log[i + j*x]*Log[c*(d + e*x)^n])/x, x
], x] - Dist[m*Log[i + j*x] - Log[h*(i + j*x)^m], Int[Log[c*(d + e*x)^n]/x,
 x], x] /; FreeQ[{c, d, e, h, i, j, m, n}, x] && NeQ[e*i - d*j, 0] && NeQ[i
 + j*x, h*(i + j*x)^m]
```

Rule 2435

```
Int[(Log[(a_) + (b_.)*(x_)]*Log[(c_) + (d_.)*(x_)])/(x_), x_Symbol] :> Simp
[Log[-((b*x)/a)]*Log[a + b*x]*Log[c + d*x], x] + (Simp[(1*(Log[-((b*x)/a)]
- Log[-(((b*c - a*d)*x)/(a*(c + d*x)))] + Log[(b*c - a*d)/(b*(c + d*x))])*L
og[(a*(c + d*x))/(c*(a + b*x))]^2)/2, x] - Simp[(1*(Log[-((b*x)/a)] - Log[-
((d*x)/c)])*(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])^2)/2, x] + Si
mp[(Log[c + d*x] - Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1 + (b*x)/a
], x] + Simp[(Log[a + b*x] + Log[(a*(c + d*x))/(c*(a + b*x))])*PolyLog[2, 1
 + (d*x)/c], x] + Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2, (c*(a +
b*x))/(a*(c + d*x))], x] - Simp[Log[(a*(c + d*x))/(c*(a + b*x))]*PolyLog[2,
 (d*(a + b*x))/(b*(c + d*x))], x] - Simp[PolyLog[3, 1 + (b*x)/a], x] - Simp
[PolyLog[3, 1 + (d*x)/c], x] + Simp[PolyLog[3, (c*(a + b*x))/(a*(c + d*x))]
, x] - Simp[PolyLog[3, (d*(a + b*x))/(b*(c + d*x))], x]) /; FreeQ[{a, b, c,
 d}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(390+jx)^m\right)\right)}{x}dx = f\int \frac{a+b\log(c(d+ex)^n)}{x}dx + g\int \frac{(a+b\log(c(d+ex)^n))\log}{x}$$

$$= f\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) + (ag)\int \frac{\log\left(h(390+jx)\right.}{x}$$

$$= f\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) + ag\log\left(-\frac{jx}{390}\right)\log\left(h(39\right.$$

$$= f\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - bg\log\left(-\frac{ex}{d}\right)\log(c(d+$$

$$= -bgm\log(390)\log(x)(n\log(d+ex)-\log(c(d+ex)^n)) + f\log$$

$$= -bgm\log(390)\log(x)(n\log(d+ex)-\log(c(d+ex)^n)) + f\log$$

Mathematica [A] time = 0.343942, size = 605, normalized size = 0.95

$$agm\left(\log(x)\left(\log(i+jx)-\log\left(\frac{jx}{i}+1\right)\right)-\text{PolyLog}\left(2,-\frac{jx}{i}\right)\right)+bgm\left(\log(x)\left(\log(i+jx)-\log\left(\frac{jx}{i}+1\right)\right)-\text{PolyLog}\left(2,\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Log[x]*(a - b*n*Log[d + e*x] + b*Log[c*(d + e*x)^n])*(f - g*m*Log[i + j*x]
+ g*Log[h*(i + j*x)^m]) + b*n*(f - g*m*Log[i + j*x] + g*Log[h*(i + j*x)^m])
*(Log[x]*(Log[d + e*x] - Log[1 + (e*x)/d]) - PolyLog[2, -((e*x)/d)]) + a*g*
m*(Log[x]*(Log[i + j*x] - Log[1 + (j*x)/i]) - PolyLog[2, -((j*x)/i)]) + b*g
*m*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*(Log[x]*(Log[i + j*x] - Log[1 +
 (j*x)/i]) - PolyLog[2, -((j*x)/i)]) + b*g*m*n*(Log[-((e*x)/d)]*Log[d + e*x
]*Log[i + j*x] + (Log[(d*(i + j*x))/(i*(d + e*x))]^2*(Log[-((e*x)/d)] + Log
[(-(e*i) + d*j)/(j*(d + e*x))] - Log[(e*i*x - d*j*x)/(d*i + e*i*x)]))/2 + (
-Log[-((e*x)/d)] + Log[-((j*x)/i)])*Log[(d*(i + j*x))/(i*(d + e*x))]*Log[1
+ (j*x)/i] + ((Log[-((e*x)/d)] - Log[-((j*x)/i)])*Log[1 + (j*x)/i]*(-2*Log[
d + e*x] + Log[1 + (j*x)/i]))/2 + (Log[i + j*x] - Log[(d*(i + j*x))/(i*(d +
 e*x))])*PolyLog[2, 1 + (e*x)/d] + Log[(d*(i + j*x))/(i*(d + e*x))]*(-PolyL
og[2, (d*(i + j*x))/(i*(d + e*x))] + PolyLog[2, (e*(i + j*x))/(j*(d + e*x))
]) + (Log[d + e*x] + Log[(d*(i + j*x))/(i*(d + e*x))])*PolyLog[2, 1 + (j*x)
/i] - PolyLog[3, 1 + (e*x)/d] + PolyLog[3, (d*(i + j*x))/(i*(d + e*x))] - P
olyLog[3, (e*(i + j*x))/(j*(d + e*x))] - PolyLog[3, 1 + (j*x)/i])
```

Maple [F] time = 1.334, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c(ex+d)^n\right)\right)\left(f+g\ln\left(h\left(jx+i\right)^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$af\log(x) + \int \frac{\left(g\log(h) + f\right)b\log\left((ex+d)^n\right) + \left(g\log(h) + f\right)b\log(c) + ag\log(h) + \left(bg\log\left((ex+d)^n\right) + bg\log(c)\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="max
ima")
```

```
[Out] a*f*log(x) + integrate(((g*log(h) + f)*b*log((e*x + d)^n) + (g*log(h) + f)*
b*log(c) + a*g*log(h) + (b*g*log((e*x + d)^n) + b*g*log(c) + a*g)*log((j*x
+ i)^m))/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bf\log\left((ex+d)^n c\right) + af + \left(bg\log\left((ex+d)^n c\right) + ag\right)\log\left(\left(jx+i\right)^m h\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="fri
cas")
```

```
[Out] integral((b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log
((j*x + i)^m*h))/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right) + a\right)\left(g\log\left(\left(jx+i\right)^m h\right) + f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)/x, x)
```

3.391 $\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$

Optimal. Leaf size=270

$$-\frac{bgjmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{i}+\frac{bgjmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{i}-\frac{begmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{d}+\frac{begmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{d}-$$

```
[Out] (g*j*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/i - (g*j*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/i + (b*e*n*Log[-((j*x)/i)]*(f
 + g*Log[h*(i + j*x)^m]))/d - (b*e*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f +
 g*Log[h*(i + j*x)^m]))/d - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/x - (b*g*j*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/i + (b*g*
j*m*n*PolyLog[2, 1 + (e*x)/d])/i - (b*e*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
 - d*j)])/d + (b*e*g*m*n*PolyLog[2, 1 + (j*x)/i])/d
```

Rubi [A] time = 0.332609, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {2439, 36, 29, 31, 2416, 2394, 2315, 2393, 2391}

$$-\frac{bgjmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{i}+\frac{bgjmn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{i}-\frac{begmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{d}+\frac{begmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{d}-$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] (g*j*m*Log[-((e*x)/d)]*(a + b*Log[c*(d + e*x)^n]))/i - (g*j*m*(a + b*Log[c*
(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/i + (b*e*n*Log[-((j*x)/i)]*(f
 + g*Log[h*(i + j*x)^m]))/d - (b*e*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f +
 g*Log[h*(i + j*x)^m]))/d - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/x - (b*g*j*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/i + (b*g*
j*m*n*PolyLog[2, 1 + (e*x)/d])/i - (b*e*g*m*n*PolyLog[2, (e*(i + j*x))/(e*i
 - d*j)])/d + (b*e*g*m*n*PolyLog[2, 1 + (j*x)/i])/d
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(391+jx)^m\right)\right)}{x^2}\,dx = -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(391+jx)^m\right)\right)}{x} + (gjm$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(391+jx)^m\right)\right)}{x} + (gjm$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(391+jx)^m\right)\right)}{x} + \frac{1}{391}($$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - \frac{1}{391}gjm\,(a+b$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - \frac{1}{391}gjm\,(a+b$$

$$= \frac{1}{391}gjm\log\left(-\frac{ex}{d}\right)(a+b\log(c(d+ex)^n)) - \frac{1}{391}gjm\,(a+b$$

Mathematica [A] time = 0.230228, size = 476, normalized size = 1.76

$$-\frac{begimnx\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)+bdgjmnx\text{PolyLog}\left(2,\frac{j(d+ex)}{dj-ei}\right)-bdgjmnx\text{PolyLog}\left(2,\frac{ex}{d}+1\right)+begimnx\text{PolyLog}\left(2,-\frac{j}{i}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] -((a*d*f*i - b*e*f*i*n*x*Log[x] - a*d*g*j*m*x*Log[-((j*x)/i)] + b*e*f*i*n*x
*Log[d + e*x] - b*d*g*j*m*n*x*Log[-((e*x)/d)]*Log[d + e*x] + b*d*g*j*m*n*x*
Log[-((j*x)/i)]*Log[d + e*x] + b*d*f*i*Log[c*(d + e*x)^n] - b*d*g*j*m*x*Log
[-((j*x)/i)]*Log[c*(d + e*x)^n] + a*d*g*j*m*x*Log[i + j*x] - b*e*g*i*m*n*x*
Log[d + e*x]*Log[i + j*x] - b*d*g*j*m*n*x*Log[d + e*x]*Log[i + j*x] + b*e*g
*i*m*n*x*Log[(j*(d + e*x))/(-(e*i) + d*j)]*Log[i + j*x] + b*d*g*j*m*x*Log[c
*(d + e*x)^n]*Log[i + j*x] + b*d*g*j*m*n*x*Log[d + e*x]*Log[(e*(i + j*x))/(
e*i - d*j)] + a*d*g*i*Log[h*(i + j*x)^m] - b*e*g*i*n*x*Log[x]*Log[h*(i + j*
x)^m] + b*e*g*i*n*x*Log[d + e*x]*Log[h*(i + j*x)^m] + b*d*g*i*Log[c*(d + e*
x)^n]*Log[h*(i + j*x)^m] + b*e*g*i*m*n*x*Log[x]*Log[1 + (j*x)/i] + b*e*g*i*
m*n*x*PolyLog[2, -((j*x)/i)] + b*d*g*j*m*n*x*PolyLog[2, (j*(d + e*x))/(-(e*
i) + d*j)] - b*d*g*j*m*n*x*PolyLog[2, 1 + (e*x)/d] + b*e*g*i*m*n*x*PolyLog[
2, (e*(i + j*x))/(e*i - d*j)])/(d*i*x))
```

Maple [F] time = 1.977, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)\left(f+g\ln\left(h\left(jx+i\right)^{m}\right)\right)}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-befn\left(\frac{\log\left(ex+d\right)}{d}-\frac{\log\left(x\right)}{d}\right)-agjm\left(\frac{\log\left(jx+i\right)}{i}-\frac{\log\left(x\right)}{i}\right)+bg\int\frac{\left(\log\left(\left(ex+d\right)^{n}\right)+\log\left(c\right)\right)\log\left(\left(jx+i\right)^{m}\right)+\log\left(\left(e\right.\right.}{x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="m
axima")
```

```
[Out] -b*e*f*n*(log(e*x + d)/d - log(x)/d) - a*g*j*m*(log(j*x + i)/i - log(x)/i)
+ b*g*integrate(((log((e*x + d)^n) + log(c))*log((j*x + i)^m) + log((e*x +
d)^n)*log(h) + log(c)*log(h))/x^2, x) - b*f*log((e*x + d)^n*c)/x - a*g*log(
(j*x + i)^m*h)/x - a*f/x
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bf\log\left((ex+d)^nc\right)+af+\left(bg\log\left((ex+d)^nc\right)+ag\right)\log\left((jx+i)^mh\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="f
ricas")
```

```
[Out] integral((b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log
((j*x + i)^m*h))/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)\left(g\log\left((jx+i)^mh\right)+f\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)/x^2, x)
```

3.392 $\int \frac{(a+b\log(c(d+ex)^n))(f+g\log(h(i+jx)^m))}{x^3}\,dx$

Optimal. Leaf size=421

$$\frac{be^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2d^2}-\frac{be^2gmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{2d^2}+\frac{bgj^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2i^2}-\frac{bgj^2mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{2i^2}$$

```
[Out] (b*e*g*j*m*n*Log[x])/(d*i) - (b*e*g*j*m*n*Log[d + e*x])/(2*d*i) - (g*j*m*(a
 + b*Log[c*(d + e*x)^n]))/(2*i*x) - (g*j^2*m*Log[-((e*x)/d)]*(a + b*Log[c*(
d + e*x)^n]))/(2*i^2) - (b*e*g*j*m*n*Log[i + j*x])/(2*d*i) + (g*j^2*m*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*i^2) - (b*e*n*(f +
 g*Log[h*(i + j*x)^m]))/(2*d*x) - (b*e^2*n*Log[-((j*x)/i)]*(f + g*Log[h*(i
+ j*x)^m]))/(2*d^2) + (b*e^2*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log
[h*(i + j*x)^m]))/(2*d^2) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/(2*x^2) + (b*g*j^2*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*i^2) - (b*g*j^2*m*n*PolyLog[2, 1 + (e*x)/d])/(2*i^2) + (b*e^2*g*m*n*PolyL
og[2, (e*(i + j*x))/(e*i - d*j)])/(2*d^2) - (b*e^2*g*m*n*PolyLog[2, 1 + (j*
x)/i])/(2*d^2)
```

Rubi [A] time = 0.455179, antiderivative size = 421, normalized size of antiderivative = 1., number of steps used = 23, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2439, 44, 2416, 2395, 36, 29, 31, 2394, 2315, 2393, 2391}

$$\frac{be^2gmn\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{2d^2}-\frac{be^2gmn\text{PolyLog}\left(2,\frac{jx}{i}+1\right)}{2d^2}+\frac{bgj^2mn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)}{2i^2}-\frac{bgj^2mn\text{PolyLog}\left(2,\frac{ex}{d}+1\right)}{2i^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^3,x]
```


```
[Out] (b*e*g*j*m*n*Log[x])/(d*i) - (b*e*g*j*m*n*Log[d + e*x])/(2*d*i) - (g*j*m*(a
 + b*Log[c*(d + e*x)^n]))/(2*i*x) - (g*j^2*m*Log[-((e*x)/d)]*(a + b*Log[c*(
d + e*x)^n]))/(2*i^2) - (b*e*g*j*m*n*Log[i + j*x])/(2*d*i) + (g*j^2*m*(a +
b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*i^2) - (b*e*n*(f +
 g*Log[h*(i + j*x)^m]))/(2*d*x) - (b*e^2*n*Log[-((j*x)/i)]*(f + g*Log[h*(i
+ j*x)^m]))/(2*d^2) + (b*e^2*n*Log[-((j*(d + e*x))/(e*i - d*j))]*(f + g*Log
[h*(i + j*x)^m]))/(2*d^2) - ((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j
*x)^m]))/(2*x^2) + (b*g*j^2*m*n*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*i^2) - (b*g*j^2*m*n*PolyLog[2, 1 + (e*x)/d])/(2*i^2) + (b*e^2*g*m*n*PolyL
og[2, (e*(i + j*x))/(e*i - d*j)])/(2*d^2) - (b*e^2*g*m*n*PolyLog[2, 1 + (j*
x)/i])/(2*d^2)
```


Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(392+jx)^m\right)\right)}{x^3}dx = -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(392+jx)^m\right)\right)}{2x^2}+\frac{1}{2}(gjm)$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(392+jx)^m\right)\right)}{2x^2}+\frac{1}{2}(gjm)$$

$$= -\frac{(a+b\log(c(d+ex)^n))\left(f+g\log\left(h(392+jx)^m\right)\right)}{2x^2}+\frac{1}{784}(gj$$

$$= -\frac{gjm(a+b\log(c(d+ex)^n))}{784x}-\frac{gj^2m\log\left(-\frac{ex}{d}\right)(a+b\log(c(d}{307328}$$

$$= -\frac{gjm(a+b\log(c(d+ex)^n))}{784x}-\frac{gj^2m\log\left(-\frac{ex}{d}\right)(a+b\log(c(d}{307328}$$

$$= \frac{begjmn\log(x)}{392d}-\frac{begjmn\log(d+ex)}{784d}-\frac{gjm(a+b\log(c(d+e}{784x}$$

Mathematica [A] time = 0.418051, size = 765, normalized size = 1.82

$$\frac{1}{2}bgmn\left(e\left(\frac{e^2\left(\frac{\text{PolyLog}\left(2,\frac{e(i+jx)}{ei-dj}\right)}{e}+\frac{\log(i+jx)\log\left(\frac{j(d+ex)}{dj-ei}\right)}{e}\right)}{d^2}-\frac{e\left(\log(x)\left(\log(i+jx)-\log\left(\frac{jx}{i}+1\right)\right)-\text{PolyLog}\left(2,-\frac{jx}{i}\right)\right)}{d^2}+\frac{j\log(x)}{i}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]))/x^3,x]
```

```
[Out] -(b*e^2*n*Log[x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m])))/(2*d^2)
+ (b*e^2*n*Log[d + e*x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m])))/(
2*d^2) - (b*n*Log[d + e*x]*(f + g*(-(m*Log[i + j*x]) + Log[h*(i + j*x)^m]))
)/(2*x^2) - ((a + b*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n]))*(f + g*(-(m*L
og[i + j*x]) + Log[h*(i + j*x)^m])))/(2*x^2) - (e*(b*f*n + b*g*n*(-(m*Log[i
 + j*x]) + Log[h*(i + j*x)^m])))/(2*d*x) + (a*g*m*((j^2*(i + j*x))/(i^3*(1
- (i + j*x)/i)) - ((j^2*(i + j*x)^2)/(i^4*(1 - (i + j*x)/i)^2) + (2*j^2*(i
+ j*x))/(i^3*(1 - (i + j*x)/i)))*Log[i + j*x] - (j^2*Log[1 - (i + j*x)/i])/
i^2))/2 + (b*g*m*(-(n*Log[d + e*x]) + Log[c*(d + e*x)^n])*((j^2*(i + j*x))/
(i^3*(1 - (i + j*x)/i)) - ((j^2*(i + j*x)^2)/(i^4*(1 - (i + j*x)/i)^2) + (2
*j^2*(i + j*x))/(i^3*(1 - (i + j*x)/i)))*Log[i + j*x] - (j^2*Log[1 - (i + j
*x)/i])/i^2))/2 + (b*g*m*n*(-((Log[d + e*x]*Log[i + j*x])/x^2) + j*(((e*Log
[x])/d - (e*Log[d + e*x])/d - Log[d + e*x]/x)/i - (j*(Log[-((e*x)/d)]*Log[d
 + e*x] + PolyLog[2, (d + e*x)/d]))/i^2 + (j^2*((Log[d + e*x]*Log[(e*(i + j
*x))/(e*i - d*j)])/j + PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)]/j))/i^2) +
e*(((j*Log[x])/i - (j*Log[i + j*x])/i - Log[i + j*x]/x)/d - (e*(Log[x]*(Log
[i + j*x] - Log[1 + (j*x)/i]) - PolyLog[2, -((j*x)/i)]))/d^2 + (e^2*((Log[(
j*(d + e*x))/(-(e*i) + d*j)]*Log[i + j*x])/e + PolyLog[2, (e*(i + j*x))/(e*
i - d*j)]/e))/d^2)))/2
```

Maple [F] time = 1.299, size = 0, normalized size = 0.

$$\int \frac{\left(a + b\ln\left(c\,(ex + d)^{n}\right)\right)\left(f + g\ln\left(h\left(jx + i\right)^{m}\right)\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^3,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*(f+g*ln(h*(j*x+i)^m))/x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,befn\left(\frac{e\log\left(ex + d\right)}{d^{2}} - \frac{e\log\left(x\right)}{d^{2}} - \frac{1}{dx}\right) + \frac{1}{2}\,agjm\left(\frac{j\log\left(jx + i\right)}{i^{2}} - \frac{j\log\left(x\right)}{i^{2}} - \frac{1}{ix}\right) + bg\int \frac{\left(\log\left((ex + d)^{n}\right) + \log\left(c\right)\right)\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="m
axima")
```

```
[Out] 1/2*b*e*f*n*(e*log(e*x + d)/d^2 - e*log(x)/d^2 - 1/(d*x)) + 1/2*a*g*j*m*(j*
log(j*x + i)/i^2 - j*log(x)/i^2 - 1/(i*x)) + b*g*integrate(((log((e*x + d)^
n) + log(c))*log((j*x + i)^m) + log((e*x + d)^n)*log(h) + log(c)*log(h))/x^
3, x) - 1/2*b*f*log((e*x + d)^n*c)/x^2 - 1/2*a*g*log((j*x + i)^m*h)/x^2 - 1
/2*a*f/x^2
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bf\log\left((ex + d)^{n}c\right) + af + \left(bg\log\left((ex + d)^{n}c\right) + ag\right)\log\left(\left(jx + i\right)^{m}h\right)}{x^{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="f
ricas")
```

```
[Out] integral((b*f*log((e*x + d)^n*c) + a*f + (b*g*log((e*x + d)^n*c) + a*g)*log
((j*x + i)^m*h))/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*(f+g*ln(h*(j*x+i)**m))/x**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\left(g\log\left((jx+i)^m h\right)+f\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*(f+g*log(h*(j*x+i)^m))/x^3,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*(g*log((j*x + i)^m*h) + f)/x^3, x)
```

3.393 $\int x (a + b \log (c(d + ex)^n))^2 \left(f + g \log \left(h(i + jx)^m\right)\right) dx$

Optimal. Leaf size=1210

result too large to display

```
[Out] (-2*a*b*d*g*m*n*x)/e - (3*a*b*g*i*m*n*x)/(2*j) - (2*b^2*d*f*n^2*x)/e + (15*
b^2*d*g*m*n^2*x)/(4*e) + (7*b^2*g*i*m*n^2*x)/(4*j) - (b^2*g*m*n^2*x^2)/4 +
(b^2*f*n^2*(d + e*x)^2)/(4*e^2) - (b^2*g*m*n^2*(d + e*x)^2)/(8*e^2) - (b^2*
d^2*g*m*n^2*Log[d + e*x])/(4*e^2) + (b^2*d^2*f*n^2*Log[d + e*x]^2)/(2*e^2)
- (2*b^2*d*g*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e^2 - (3*b^2*g*i*m*n*(d + e*
x)*Log[c*(d + e*x)^n])/(2*e*j) + (b*g*m*n*x^2*(a + b*Log[c*(d + e*x)^n]))/4
 + (2*b*d*f*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n]))/e^2 - (b*f*n*(d + e*x)^
2*(a + b*Log[c*(d + e*x)^n]))/(2*e^2) + (b*g*m*n*(d + e*x)^2*(a + b*Log[c*(
d + e*x)^n]))/(4*e^2) - (b*d^2*f*n*Log[d + e*x]*(a + b*Log[c*(d + e*x)^n]))
/e^2 + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) + (g*i*m*(d +
 e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e*j) - (g*m*(d + e*x)^2*(a + b*Log[c
*(d + e*x)^n])^2)/(4*e^2) - (b^2*g*i^2*m*n^2*Log[i + j*x])/(4*j^2) + (b*g*i
^2*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(2*j^2) +
 (b*d*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/(e
*j) + (d^2*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])
/(2*e^2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d
*j)])/(2*j^2) + (b^2*g*n^2*x^2*Log[h*(i + j*x)^m])/4 - (3*b^2*d*g*n^2*(i +
j*x)*Log[h*(i + j*x)^m])/(2*e*j) + (3*b^2*d^2*g*n^2*Log[-((j*(d + e*x))/(e*
i - d*j))]*Log[h*(i + j*x)^m])/(2*e^2) + (b*d*g*n*x*(a + b*Log[c*(d + e*x)^
n])*Log[h*(i + j*x)^m])/e - (b*g*n*x^2*(a + b*Log[c*(d + e*x)^n])*Log[h*(i
+ j*x)^m])/2 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*x)^m])/(2*e
^2) + (x^2*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/2 + (b^
2*g*i^2*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2) + (b^2*d*g*
i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (b*d^2*g*m*n*(a +
 b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e^2 - (b*g
*i^2*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))
])/j^2 + (3*b^2*d^2*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/(2*e^2)
- (b^2*d^2*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e^2 + (b^2*g*i
^2*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j^2
```

Rubi [A] time = 2.79024, antiderivative size = 1179, normalized size of antiderivative = 0.97, number of steps used = 73, number of rules used = 27, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.844, Rules used = {2439, 2416, 2389, 2296, 2295, 2401, 2390, 2305, 2304, 2396, 2433, 2374, 6589, 6742, 2411, 43, 2334, 12, 14, 2301, 2430, 2394, 2393, 2391, 2395, 2375, 2317}

$$-\frac{1}{4}gmn^2x^2b^2 + \frac{fn^2(d+ex)^2b^2}{4e^2} - \frac{gmn^2(d+ex)^2b^2}{8e^2} + \frac{d^2fn^2\log^2(d+ex)b^2}{2e^2} - \frac{2dfn^2xb^2}{e} + \frac{15dgmn^2xb^2}{4e} + \frac{7gimn^2xb^2}{4j}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-2*a*b*d*g*m*n*x)/e - (3*a*b*g*i*m*n*x)/(2*j) - (2*b^2*d*f*n^2*x)/e + (15*
b^2*d*g*m*n^2*x)/(4*e) + (7*b^2*g*i*m*n^2*x)/(4*j) - (b^2*g*m*n^2*x^2)/4 +
(b^2*f*n^2*(d + e*x)^2)/(4*e^2) - (b^2*g*m*n^2*(d + e*x)^2)/(8*e^2) - (b^2*
d^2*g*m*n^2*Log[d + e*x])/(4*e^2) + (b^2*d^2*f*n^2*Log[d + e*x]^2)/(2*e^2)
- (2*b^2*d*g*m*n*(d + e*x)*Log[c*(d + e*x)^n])/e^2 - (3*b^2*g*i*m*n*(d + e*
x)*Log[c*(d + e*x)^n])/(2*e*j) + (b*g*m*n*x^2*(a + b*Log[c*(d + e*x)^n]))/4
 + (b*g*m*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) + (b*f*n*((4*d*
(d + e*x))/e^2 - (d + e*x)^2/e^2 - (2*d^2*Log[d + e*x])/e^2)*(a + b*Log[c*(
```

```
d + e*x)^n]))/2 + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e^2) +
(g*i*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(2*e*j) - (g*m*(d + e*x)^2*(
a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) - (b^2*g*i^2*m*n^2*Log[i + j*x])/(4*j^
2) + (b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)]
)/(2*j^2) + (b*d*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i
- d*j)])/(e*j) + (d^2*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e
*i - d*j)])/(2*e^2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x
))/(e*i - d*j)])/(2*j^2) + (b^2*g*n^2*x^2*Log[h*(i + j*x)^m])/4 - (3*b^2*d*
g*n^2*(i + j*x)*Log[h*(i + j*x)^m])/(2*e*j) + (3*b^2*d^2*g*n^2*Log[-((j*(d
+ e*x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/(2*e^2) + (b*d*g*n*x*(a + b*Log[c
*(d + e*x)^n])*Log[h*(i + j*x)^m])/e - (b*g*n*x^2*(a + b*Log[c*(d + e*x)^n]
)*Log[h*(i + j*x)^m])/2 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*
x)^m])/(2*e^2) + (x^2*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m
]))/2 + (b^2*g*i^2*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*j^2)
+ (b^2*d*g*i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (b*d^2
*g*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])
/e^2 - (b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(
e*i - d*j))])/j^2 + (3*b^2*d^2*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)
])/(2*e^2) - (b^2*d^2*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e^2
 + (b^2*g*i^2*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j^2
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
```

```
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x\,(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(393+jx)^m\right)\right)dx=\frac{1}{2}x^2\,(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(393+jx)^m\right)\right)-\frac{1}{2}$$

$$=\frac{1}{2}x^2\,(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(393+jx)^m\right)\right)-\frac{1}{2}$$

$$=\frac{1}{2}x^2\,(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(393+jx)^m\right)\right)-\frac{1}{2}$$

$$=-\frac{154449gm\,(a+b\log(c(d+ex)^n))^2\log\left(\frac{e(393+jx)}{393e-dj}\right)}{2j^2}+\frac{1}{2}x^2\,(a$$

$$=\frac{1}{2}bfn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d+ex)}{e^2}\right)(a+b\log$$

$$=-\frac{393abgmnx}{j}+\frac{1}{2}bfn\left(\frac{4d(d+ex)}{e^2}-\frac{(d+ex)^2}{e^2}-\frac{2d^2\log(d}{e^2}\right.$$

$$=-\frac{393abgmnx}{j}+\frac{393b^2gmn^2x}{j}-\frac{393b^2gmn(d+ex)\log(c(d}{ej}$$

$$=-\frac{abdgmnx}{e}-\frac{393abgmnx}{j}-\frac{2b^2dfn^2x}{e}+\frac{393b^2gmn^2x}{j}+$$

$$=-\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{b^2dgmn^2x}{e}+$$

$$=-\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{5b^2dgmn^2x}{2e}+$$

$$=-\frac{2abdgmnx}{e}-\frac{1179abgmnx}{2j}-\frac{2b^2dfn^2x}{e}+\frac{15b^2dgmn^2x}{4e}+$$

Mathematica [A] time = 0.942629, size = 2067, normalized size = 1.71

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-8*a*b*d*e*g*i*j*m*n + 4*b^2*d*e*g*i*j*m*n^2 + 8*b^2*d^2*g*j^2*m*n^2 + 4*a
^2*e^2*g*i*j*m*x + 8*a*b*d*e*f*j^2*n*x - 12*a*b*e^2*g*i*j*m*n*x - 12*a*b*d*
e*g*j^2*m*n*x - 12*b^2*d*e*f*j^2*n^2*x + 14*b^2*e^2*g*i*j*m*n^2*x + 28*b^2*
d*e*g*j^2*m*n^2*x + 4*a^2*e^2*f*j^2*x^2 - 2*a^2*e^2*g*j^2*m*x^2 - 4*a*b*e^2
*f*j^2*n*x^2 + 4*a*b*e^2*g*j^2*m*n*x^2 + 2*b^2*e^2*f*j^2*n^2*x^2 - 3*b^2*e^
2*g*j^2*m*n^2*x^2 - 8*a*b*d^2*f*j^2*n*Log[d + e*x] + 8*a*b*d*e*g*i*j*m*n*Lo
```

```
g[d + e*x] + 4*a*b*d^2*g*j^2*m*n*Log[d + e*x] + 12*b^2*d^2*f*j^2*n^2*Log[d
+ e*x] - 4*b^2*d*e*g*i*j*m*n^2*Log[d + e*x] - 16*b^2*d^2*g*j^2*m*n^2*Log[d
+ e*x] + 4*b^2*d^2*f*j^2*n^2*Log[d + e*x]^2 - 4*b^2*d*e*g*i*j*m*n^2*Log[d +
 e*x]^2 - 2*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]^2 - 8*b^2*d*e*g*i*j*m*n*Log[c*
(d + e*x)^n] + 8*a*b*e^2*g*i*j*m*x*Log[c*(d + e*x)^n] + 8*b^2*d*e*f*j^2*n*x
*Log[c*(d + e*x)^n] - 12*b^2*e^2*g*i*j*m*n*x*Log[c*(d + e*x)^n] - 12*b^2*d*
e*g*j^2*m*n*x*Log[c*(d + e*x)^n] + 8*a*b*e^2*f*j^2*x^2*Log[c*(d + e*x)^n] -
 4*a*b*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n] - 4*b^2*e^2*f*j^2*n*x^2*Log[c*(d
+ e*x)^n] + 4*b^2*e^2*g*j^2*m*n*x^2*Log[c*(d + e*x)^n] - 8*b^2*d^2*f*j^2*n*
Log[d + e*x]*Log[c*(d + e*x)^n] + 8*b^2*d*e*g*i*j*m*n*Log[d + e*x]*Log[c*(d
 + e*x)^n] + 4*b^2*d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 4*b^2*e^
2*g*i*j*m*x*Log[c*(d + e*x)^n]^2 + 4*b^2*e^2*f*j^2*x^2*Log[c*(d + e*x)^n]^2
 - 2*b^2*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n]^2 - 4*a^2*e^2*g*i^2*m*Log[i + j
*x] + 4*a*b*e^2*g*i^2*m*n*Log[i + j*x] + 8*a*b*d*e*g*i*j*m*n*Log[i + j*x] -
 2*b^2*e^2*g*i^2*m*n^2*Log[i + j*x] - 12*b^2*d*e*g*i*j*m*n^2*Log[i + j*x] +
 8*a*b*e^2*g*i^2*m*n*Log[d + e*x]*Log[i + j*x] - 4*b^2*e^2*g*i^2*m*n^2*Log[
d + e*x]*Log[i + j*x] - 8*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[i + j*x] - 4
*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[i + j*x] - 8*a*b*e^2*g*i^2*m*Log[c*
(d + e*x)^n]*Log[i + j*x] + 4*b^2*e^2*g*i^2*m*n*Log[c*(d + e*x)^n]*Log[i +
j*x] + 8*b^2*d*e*g*i*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 8*b^2*e^2*g*i^
2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 4*b^2*e^2*g*i^2*m*Log[
c*(d + e*x)^n]^2*Log[i + j*x] - 8*a*b*e^2*g*i^2*m*n*Log[d + e*x]*Log[(e*(i
+ j*x))/(e*i - d*j)] + 8*a*b*d^2*g*j^2*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(
e*i - d*j)] + 4*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d
*j)] + 8*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] -
12*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 4*b^2*
e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 4*b^2*d^2*g
*j^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 8*b^2*e^2*g*i^2*
m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 8*b^2*
d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)
] + 8*a*b*d*e*g*j^2*n*x*Log[h*(i + j*x)^m] - 12*b^2*d*e*g*j^2*n^2*x*Log[h*(
i + j*x)^m] + 4*a^2*e^2*g*j^2*x^2*Log[h*(i + j*x)^m] - 4*a*b*e^2*g*j^2*n*x^
2*Log[h*(i + j*x)^m] + 2*b^2*e^2*g*j^2*n^2*x^2*Log[h*(i + j*x)^m] - 8*a*b*d
^2*g*j^2*n*Log[d + e*x]*Log[h*(i + j*x)^m] + 12*b^2*d^2*g*j^2*n^2*Log[d + e
*x]*Log[h*(i + j*x)^m] + 4*b^2*d^2*g*j^2*n^2*Log[d + e*x]^2*Log[h*(i + j*x)
^m] + 8*b^2*d*e*g*j^2*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 8*a*b*e^2
*g*j^2*x^2*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 4*b^2*e^2*g*j^2*n*x^2*Lo
g[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 8*b^2*d^2*g*j^2*n*Log[d + e*x]*Log[c*
(d + e*x)^n]*Log[h*(i + j*x)^m] + 4*b^2*e^2*g*j^2*x^2*Log[c*(d + e*x)^n]^2*
Log[h*(i + j*x)^m] - 4*b*g*(e*i - d*j)*m*n*(2*a*(e*i + d*j) - b*(e*i + 3*d*
j)*n + 2*b*(e*i + d*j)*Log[c*(d + e*x)^n])*PolyLog[2, (j*(d + e*x))/(-(e*i)
 + d*j)] + 8*b^2*g*(e^2*i^2 - d^2*j^2)*m*n^2*PolyLog[3, (j*(d + e*x))/(-(e*
i) + d*j)])/(8*e^2*j^2)
```

Maple [F] time = 4.207, size = 0, normalized size = 0.

$$\int x\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\left(f+g\ln\left(h\left(jx+i\right)^{m}\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] int(x*(a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/2*b^2*f*x^2*log((e*x + d)^n*c)^2 - 1/2*a*b*e*f*n*(2*d^2*log(e*x + d)/e^3
+ (e*x^2 - 2*d*x)/e^2) - 1/4*a^2*g*j*m*(2*i^2*log(j*x + i)/j^3 + (j*x^2 - 2
*i*x)/j^2) + a*b*f*x^2*log((e*x + d)^n*c) + 1/2*a^2*g*x^2*log((j*x + i)^m*h
) + 1/2*a^2*f*x^2 - 1/4*(2*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^
2)*log((e*x + d)^n*c) - (e^2*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*l
og(e*x + d))*n^2/e^2)*b^2*f + 1/4*((2*b^2*e^2*g*i*j*m*x - 2*b^2*e^2*g*i^2*m
*log(j*x + i) - (j^2*m - 2*j^2*log(h))*b^2*e^2*g*x^2)*log((e*x + d)^n)^2 +
(2*b^2*d^2*g*j^2*n^2*log(e*x + d)^2 + 2*b^2*e^2*g*j^2*x^2*log((e*x + d)^n)^
2 - (2*(e^2*g*j^2*n - 2*e^2*g*j^2*log(c))*a*b - (e^2*g*j^2*n^2 - 2*e^2*g*j^
2*n*log(c) + 2*e^2*g*j^2*log(c)^2)*b^2)*x^2 + 2*(2*a*b*d*e*g*j^2*n - (3*d*e
*g*j^2*n^2 - 2*d*e*g*j^2*n*log(c))*b^2)*x - 2*(2*a*b*d^2*g*j^2*n - (3*d^2*g
*j^2*n^2 - 2*d^2*g*j^2*n*log(c))*b^2)*log(e*x + d) + 2*(2*b^2*d*e*g*j^2*n*x
 - 2*b^2*d^2*g*j^2*n*log(e*x + d) + (2*a*b*e^2*g*j^2 - (e^2*g*j^2*n - 2*e^2
*g*j^2*log(c))*b^2)*x^2)*log((e*x + d)^n))*log((j*x + i)^m))/(e^2*j^2) + in
tegrate(1/4*((2*(e^3*g*j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*e^3*g*log(c))*a*b
 - (e^3*g*j^3*m*n^2 - 2*e^3*g*j^3*m*n*log(c) + 2*(j^3*m - 2*j^3*log(h))*e^3
*g*log(c)^2)*b^2)*x^3 - (2*(d*e^2*g*j^3*m*n - 2*(2*e^3*g*i*j^2*log(h) - (j^
3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*a*b - (5*d*e^2*g*j^3*m*n^2 - 2*d*e^2*g
*j^3*m*n*log(c) + 2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)
*log(c)^2)*b^2)*x^2 - 2*(b^2*d^2*e*g*j^3*m*n^2*x + b^2*d^3*g*j^3*m*n^2)*log
(e*x + d)^2 - 2*(2*(d^2*e*g*j^3*m*n - 2*d*e^2*g*i*j^2*log(c)*log(h))*a*b -
(3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g*j^3*m*n*log(c) + 2*d*e^2*g*i*j^2*log(c)^2*
log(h))*b^2)*x + 2*(2*a*b*d^3*g*j^3*m*n - (3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*
m*n*log(c))*b^2 + (2*a*b*d^2*e*g*j^3*m*n - (3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g
*j^3*m*n*log(c))*b^2)*x)*log(e*x + d) - 2*(2*((j^3*m - 2*j^3*log(h))*a*b*e^
3*g + ((j^3*m - 2*j^3*log(h))*e^3*g*log(c) - (j^3*m*n - j^3*n*log(h))*e^3*g
)*b^2)*x^3 - (2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*a*b
 - (d*e^2*g*j^3*m*n + (i*j^2*m*n + 2*i*j^2*n*log(h))*e^3*g - 2*(2*e^3*g*i*j
^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*b^2)*x^2 - 2*(2*a*b*d*e
^2*g*i*j^2*log(h) - (e^3*g*i^2*j*m*n + d^2*e*g*j^3*m*n - 2*d*e^2*g*i*j^2*lo
g(c)*log(h))*b^2)*x - 2*(b^2*d^2*e*g*j^3*m*n*x + b^2*d^3*g*j^3*m*n)*log(e*x
 + d) - 2*(b^2*e^3*g*i^2*j*m*n*x + b^2*e^3*g*i^3*m*n)*log(j*x + i))*log((e*
x + d)^n))/(e^3*j^3*x^2 + d*e^2*i*j^2 + (e^3*i*j^2 + d*e^2*j^3)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(b^2fx\log\left((ex+d)^nc\right)^2 + 2\,abfx\log\left((ex+d)^nc\right) + a^2fx + \left(b^2gx\log\left((ex+d)^nc\right)^2 + 2\,abgx\log\left((ex+d)^nc\right) + a^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b^2*f*x*log((e*x + d)^n*c)^2 + 2*a*b*f*x*log((e*x + d)^n*c) + a^2*
f*x + (b^2*g*x*log((e*x + d)^n*c)^2 + 2*a*b*g*x*log((e*x + d)^n*c) + a^2*g*
x)*log((j*x + i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^2 \left(g\log\left(\left(jx+i\right)^m h\right)+f\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f)*x, x)
```

3.394 $\int (a+b\log(c(d+ex)^n))^2 \left(f+g\log\left(h(i+jx)^m\right)\right)\,dx$

Optimal. Leaf size=649

$$-\frac{2bdgmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{e}+\frac{2bgimn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{j}-\frac{2b^2gim}{\cdots}$$

```
[Out] -2*a*b*f*n*x + 4*a*b*g*m*n*x + 2*b^2*f*n^2*x - 6*b^2*g*m*n^2*x - (2*b^2*f*n
*(d + e*x)*Log[c*(d + e*x)^n])/e + (4*b^2*g*m*n*(d + e*x)*Log[c*(d + e*x)^n
])/e + (d*f*(a + b*Log[c*(d + e*x)^n])^2)/e - (g*m*(d + e*x)*(a + b*Log[c*(
d + e*x)^n])^2)/e - (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x
))/(e*i - d*j)])/j - (d*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/
(e*i - d*j)])/e + (g*i*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*
i - d*j)])/j + (2*b^2*g*n^2*(i + j*x)*Log[h*(i + j*x)^m])/j - (2*b^2*d*g*n^
2*Log[-((j*(d + e*x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e - 2*b*g*n*x*(a +
b*Log[c*(d + e*x)^n])*Log[h*(i + j*x)^m] + (d*g*(a + b*Log[c*(d + e*x)^n])^
2*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i +
j*x)^m]) - (2*b^2*g*i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (
2*b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*
j))])/e + (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x)
)/(e*i - d*j))])/j - (2*b^2*d*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)]
)/e + (2*b^2*d*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (2*b^2
*g*i*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rubi [A] time = 1.48128, antiderivative size = 649, normalized size of antiderivative = 1., number of steps used = 41, number of rules used = 19, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.613, Rules used = {2430, 2416, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 6742, 2411, 2346, 2301, 43, 2394, 2393, 2391, 2375, 2317}

$$-\frac{2bdgmn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{e}+\frac{2bgimn\text{PolyLog}\left(2,-\frac{j(d+ex)}{ei-dj}\right)(a+b\log(c(d+ex)^n))}{j}-\frac{2b^2gim}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] -2*a*b*f*n*x + 4*a*b*g*m*n*x + 2*b^2*f*n^2*x - 6*b^2*g*m*n^2*x - (2*b^2*f*n
*(d + e*x)*Log[c*(d + e*x)^n])/e + (4*b^2*g*m*n*(d + e*x)*Log[c*(d + e*x)^n
])/e + (d*f*(a + b*Log[c*(d + e*x)^n])^2)/e - (g*m*(d + e*x)*(a + b*Log[c*(
d + e*x)^n])^2)/e - (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x
))/(e*i - d*j)])/j - (d*g*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/
(e*i - d*j)])/e + (g*i*m*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*
i - d*j)])/j + (2*b^2*g*n^2*(i + j*x)*Log[h*(i + j*x)^m])/j - (2*b^2*d*g*n^
2*Log[-((j*(d + e*x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e - 2*b*g*n*x*(a +
b*Log[c*(d + e*x)^n])*Log[h*(i + j*x)^m] + (d*g*(a + b*Log[c*(d + e*x)^n])^
2*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i +
j*x)^m]) - (2*b^2*g*i*m*n^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (
2*b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*
j))])/e + (2*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x)
)/(e*i - d*j))])/j - (2*b^2*d*g*m*n^2*PolyLog[2, (e*(i + j*x))/(e*i - d*j)]
)/e + (2*b^2*d*g*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (2*b^2
*g*i*m*n^2*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
```

```
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^2 \left(f+g\log\left(h(394+jx)^m\right)\right) dx = x(a+b\log(c(d+ex)^n))^2 \left(f+g\log\left(h(394+jx)^m\right)\right) - (gj$$

$$= x(a+b\log(c(d+ex)^n))^2 \left(f+g\log\left(h(394+jx)^m\right)\right) - (gj$$

$$= x(a+b\log(c(d+ex)^n))^2 \left(f+g\log\left(h(394+jx)^m\right)\right) - (gm$$

$$= \frac{394gm(a+b\log(c(d+ex)^n))^2 \log\left(\frac{e(394+jx)}{394e-dj}\right)}{j} + x(a+b\log$$

$$= -\frac{gm(d+ex)(a+b\log(c(d+ex)^n))^2}{e} + \frac{394gm(a+b\log}{}$$

$$= -2abfnx + 2abgmnx + \frac{df(a+b\log(c(d+ex)^n))^2}{e} - \frac{gm(}{}$$

$$= -2abfnx + 2abgmnx + 2b^2fn^2x - 2b^2gmn^2x - \frac{2b^2fn(d}{}$$

$$= -2abfnx + 2abgmnx + 2b^2fn^2x - 2b^2gmn^2x - \frac{2b^2fn(d}{}$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 2b^2gmn^2x - \frac{2b^2fn(d}{}$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 4b^2gmn^2x - \frac{2b^2fn(d}{}$$

$$= -2abfnx + 4abgmnx + 2b^2fn^2x - 6b^2gmn^2x - \frac{2b^2fn(d}{}$$

Mathematica [B] time = 0.533498, size = 1355, normalized size = 2.09

$$\frac{efjxa^2 - egjmxa^2 + egim\log(i+jx)a^2 + egjx\log\left(h(i+jx)^m\right)a^2 - 2bdfjna + 2bdgjmna - 2befjnxa + 4begjmnxa + 2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-2*a*b*d*f*j*n + 2*a*b*d*g*j*m*n - 2*b^2*d*g*j*m*n^2 + a^2*e*f*j*x - a^2*e
*g*j*m*x - 2*a*b*e*f*j*n*x + 4*a*b*e*g*j*m*n*x + 2*b^2*e*f*j*n^2*x - 6*b^2*
e*g*j*m*n^2*x + 2*a*b*d*f*j*n*Log[d + e*x] - 2*a*b*d*g*j*m*n*Log[d + e*x] +
 2*b^2*d*g*j*m*n^2*Log[d + e*x] - b^2*d*f*j*n^2*Log[d + e*x]^2 + b^2*d*g*j*
m*n^2*Log[d + e*x]^2 - 2*b^2*d*f*j*n*Log[c*(d + e*x)^n] + 2*b^2*d*g*j*m*n*L
og[c*(d + e*x)^n] + 2*a*b*e*f*j*x*Log[c*(d + e*x)^n] - 2*a*b*e*g*j*m*x*Log[
c*(d + e*x)^n] - 2*b^2*e*f*j*n*x*Log[c*(d + e*x)^n] + 4*b^2*e*g*j*m*n*x*Log
[c*(d + e*x)^n] + 2*b^2*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x)^n] - 2*b^2*d*g
*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + b^2*e*f*j*x*Log[c*(d + e*x)^n]^2 -
 b^2*e*g*j*m*x*Log[c*(d + e*x)^n]^2 + a^2*e*g*i*m*Log[i + j*x] - 2*a*b*e*g*
i*m*n*Log[i + j*x] + 2*a*b*d*g*j*m*n*Log[i + j*x] + 2*b^2*e*g*i*m*n^2*Log[i
 + j*x] - 2*a*b*e*g*i*m*n*Log[d + e*x]*Log[i + j*x] + 2*b^2*e*g*i*m*n^2*Log
[d + e*x]*Log[i + j*x] - 2*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[i + j*x] + b^2*
e*g*i*m*n^2*Log[d + e*x]^2*Log[i + j*x] + 2*a*b*e*g*i*m*Log[c*(d + e*x)^n]*
Log[i + j*x] - 2*b^2*e*g*i*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 2*b^2*d*g*
j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] - 2*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*
(d + e*x)^n]*Log[i + j*x] + b^2*e*g*i*m*Log[c*(d + e*x)^n]^2*Log[i + j*x] +
 2*a*b*e*g*i*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*a*b*d*g*j*
m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 2*b^2*e*g*i*m*n^2*Log[d +
 e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 2*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[(
e*(i + j*x))/(e*i - d*j)] - b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x)
)/(e*i - d*j)] + b^2*d*g*j*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*
j)] + 2*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*
i - d*j)] - 2*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x
))/(e*i - d*j)] - 2*a*b*d*g*j*n*Log[h*(i + j*x)^m] + a^2*e*g*j*x*Log[h*(i +
 j*x)^m] - 2*a*b*e*g*j*n*x*Log[h*(i + j*x)^m] + 2*b^2*e*g*j*n^2*x*Log[h*(i
+ j*x)^m] + 2*a*b*d*g*j*n*Log[d + e*x]*Log[h*(i + j*x)^m] - b^2*d*g*j*n^2*L
og[d + e*x]^2*Log[h*(i + j*x)^m] - 2*b^2*d*g*j*n*Log[c*(d + e*x)^n]*Log[h*(
i + j*x)^m] + 2*a*b*e*g*j*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 2*b^2*e
*g*j*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 2*b^2*d*g*j*n*Log[d + e*x]
*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + b^2*e*g*j*x*Log[c*(d + e*x)^n]^2*L
og[h*(i + j*x)^m] + 2*b*g*(e*i - d*j)*m*n*(a - b*n + b*Log[c*(d + e*x)^n])*
PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] + 2*b^2*g*(-(e*i) + d*j)*m*n^2*Pol
yLog[3, (j*(d + e*x))/(-(e*i) + d*j)])/(e*j)
```

Maple [F] time = 2.82, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{2}\left(f+g\ln\left(h\left(jx+i\right)^{m}\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] -2*a*b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a^2*g*j*m*(x/j - i*log(j*x + i)/j
^2) + b^2*f*x*log((e*x + d)^n*c)^2 + 2*a*b*f*x*log((e*x + d)^n*c) + a^2*g*x
*log((j*x + i)^m*h) - (2*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x + d)^n*c)
+ (d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n^2/e)*b^2*f + a^2*f*x + ((
b^2*e*g*i*m*log(j*x + i) - (j*m - j*log(h))*b^2*e*g*x)*log((e*x + d)^n)^2 -
 (b^2*d*g*j*n^2*log(e*x + d)^2 - b^2*e*g*j*x*log((e*x + d)^n)^2 + (2*(e*g*j
*n - e*g*j*log(c))*a*b - (2*e*g*j*n^2 - 2*e*g*j*n*log(c) + e*g*j*log(c)^2)*
b^2)*x - 2*(a*b*d*g*j*n - (d*g*j*n^2 - d*g*j*n*log(c))*b^2)*log(e*x + d) -
2*(b^2*d*g*j*n*log(e*x + d) + (a*b*e*g*j - (e*g*j*n - e*g*j*log(c))*b^2)*x)
*log((e*x + d)^n))*log((j*x + i)^m))/(e*j) - integrate(-(b^2*d*e*g*i*j*log(
c)^2*log(h) + 2*a*b*d*e*g*i*j*log(c)*log(h) + (2*(e^2*g*j^2*m*n - (j^2*m -
j^2*log(h))*e^2*g*log(c))*a*b - (2*e^2*g*j^2*m*n^2 - 2*e^2*g*j^2*m*n*log(c)
 + (j^2*m - j^2*log(h))*e^2*g*log(c)^2)*b^2)*x^2 + (b^2*d*e*g*j^2*m*n^2*x +
 b^2*d^2*g*j^2*m*n^2)*log(e*x + d)^2 + (2*(d*e*g*j^2*m*n + (e^2*g*i*j*log(h
) - (j^2*m - j^2*log(h))*d*e*g)*log(c))*a*b - (2*d*e*g*j^2*m*n^2 - 2*d*e*g*
j^2*m*n*log(c) - (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c)^2)*
b^2)*x - 2*(a*b*d^2*g*j^2*m*n - (d^2*g*j^2*m*n^2 - d^2*g*j^2*m*n*log(c))*b^
2 + (a*b*d*e*g*j^2*m*n - (d*e*g*j^2*m*n^2 - d*e*g*j^2*m*n*log(c))*b^2)*x)*l
og(e*x + d) + 2*(b^2*d*e*g*i*j*log(c)*log(h) + a*b*d*e*g*i*j*log(h) - ((j^2
*m - j^2*log(h))*a*b*e^2*g + ((j^2*m - j^2*log(h))*e^2*g*log(c) - (2*j^2*m*
n - j^2*n*log(h))*e^2*g)*b^2)*x^2 + ((e^2*g*i*j*log(h) - (j^2*m - j^2*log(h
))*d*e*g)*a*b + (d*e*g*j^2*m*n + (i*j*m*n - i*j*n*log(h))*e^2*g + (e^2*g*i*
j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c))*b^2)*x - (b^2*d*e*g*j^2*m*n*
x + b^2*d^2*g*j^2*m*n)*log(e*x + d) - (b^2*e^2*g*i*j*m*n*x + b^2*e^2*g*i^2*
m*n)*log(j*x + i))*log((e*x + d)^n))/(e^2*j^2*x^2 + d*e*i*j + (e^2*i*j + d*
e*j^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(b^2 f \log\left((ex+d)^n c\right)^2 + 2\,abf \log\left((ex+d)^n c\right) + a^2 f + \left(b^2 g \log\left((ex+d)^n c\right)^2 + 2\,abg \log\left((ex+d)^n c\right) + a^2 g\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] integral(b^2*f*log((e*x + d)^n*c)^2 + 2*a*b*f*log((e*x + d)^n*c) + a^2*f +
(b^2*g*log((e*x + d)^n*c)^2 + 2*a*b*g*log((e*x + d)^n*c) + a^2*g)*log((j*x
+ i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac **[F]** time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^2 \left(g\log\left(\left(jx+i\right)^m h\right)+f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f), x)
```

3.395 $\int \frac{(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$

Optimal. Leaf size=36

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(i+jx)^m\right)\right)}{x},x\right)$$

```
[Out] Unintegrable[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x
]
```

Rubi [A] time = 0.0370585, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(395+jx)^m\right)\right)}{x}\,dx=\int \frac{(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(395+jx)^m\right)\right)}{x}\,dx$$

Mathematica [A] time = 0.69157, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^2\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Maple [A] time = 1.535, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2\left(f+g\ln\left(h\left(jx+i\right)^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$a^2 f\log(x) + \int \frac{\left(g\log(h)+f\right)b^2\log\left((ex+d)^n\right)^2 + \left(g\log(h)+f\right)b^2\log(c)^2 + 2\left(g\log(h)+f\right)ab\log(c) + a^2 g\log(h) +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="m
axima")
```

```
[Out] a^2*f*log(x) + integrate(((g*log(h) + f)*b^2*log((e*x + d)^n)^2 + (g*log(h)
 + f)*b^2*log(c)^2 + 2*(g*log(h) + f)*a*b*log(c) + a^2*g*log(h) + 2*((g*log
(h) + f)*b^2*log(c) + (g*log(h) + f)*a*b)*log((e*x + d)^n) + (b^2*g*log((e*
x + d)^n)^2 + b^2*g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*log(c) + a
*b*g)*log((e*x + d)^n))*log((j*x + i)^m))/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2 f\log\left((ex+d)^n c\right)^2 + 2\,abf\log\left((ex+d)^n c\right) + a^2 f + \left(b^2 g\log\left((ex+d)^n c\right)^2 + 2\,abg\log\left((ex+d)^n c\right) + a^2 g\right)\log}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="f
ricas")
```

```
[Out] integral((b^2*f*log((e*x + d)^n*c)^2 + 2*a*b*f*log((e*x + d)^n*c) + a^2*f +
 (b^2*g*log((e*x + d)^n*c)^2 + 2*a*b*g*log((e*x + d)^n*c) + a^2*g)*log((j*x
 + i)^m*h))/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^2\left(g\log\left((jx+i)^m h\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f)/x, x)
```

3.396 $\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$

Optimal. Leaf size=36

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2},x\right)$$

```
[Out] Unintegrable[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,
 x]
```

Rubi [A] time = 0.0396986, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2, x
]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(396+jx)^m))}{x^2}\,dx = \int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(396+jx)^m))}{x^2}\,dx$$

Mathematica [A] time = 0.865298, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^2(f+g\log(h(i+jx)^m))}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^2*(f + g*Log[h*(i + j*x)^m]))/x^2, x]
```

Maple [A] time = 1.424, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^2\left(f+g\ln\left(h\left(jx+i\right)^m\right)\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^2*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-2\,abefn\left(\frac{\log(ex+d)}{d}-\frac{\log(x)}{d}\right)-\frac{2\,abf\log\left((ex+d)^nc\right)}{x}-\frac{a^2f}{x}+\int\frac{\left(g\log(h)+f\right)b^2\log\left((ex+d)^n\right)^2+\left(g\log(h)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"maxima")
```

```
[Out] -2*a*b*e*f*n*(log(e*x + d)/d - log(x)/d) - 2*a*b*f*log((e*x + d)^n*c)/x - a
^2*f/x + integrate(((g*log(h) + f)*b^2*log((e*x + d)^n)^2 + (g*log(h) + f)*
b^2*log(c)^2 + 2*a*b*g*log(c)*log(h) + a^2*g*log(h) + 2*((g*log(h) + f)*b^2
*log(c) + a*b*g*log(h))*log((e*x + d)^n) + (b^2*g*log((e*x + d)^n)^2 + b^2*
g*log(c)^2 + 2*a*b*g*log(c) + a^2*g + 2*(b^2*g*log(c) + a*b*g)*log((e*x + d
)^n))*log((j*x + i)^m))/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2f\log\left((ex+d)^nc\right)^2+2\,abf\log\left((ex+d)^nc\right)+a^2f+\left(b^2g\log\left((ex+d)^nc\right)^2+2\,abg\log\left((ex+d)^nc\right)+a^2g\right)}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"fricas")
```

```
[Out] integral((b^2*f*log((e*x + d)^n*c)^2 + 2*a*b*f*log((e*x + d)^n*c) + a^2*f +
 (b^2*g*log((e*x + d)^n*c)^2 + 2*a*b*g*log((e*x + d)^n*c) + a^2*g)*log((j*x
 + i)^m*h))/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**2*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^nc\right)+a\right)^2\left(g\log\left((jx+i)^mh\right)+f\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^2*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^2*(g*log((j*x + i)^m*h) + f)/x^2, x)
```

3.397 $\int x(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)dx$

Optimal. Leaf size=2050

result too large to display

```
[Out] (-6*a*b^2*d*f*n^2*x)/e + (12*a*b^2*d*g*m*n^2*x)/e + (21*a*b^2*g*i*m*n^2*x)/
(4*j) + (6*b^3*d*f*n^3*x)/e - (141*b^3*d*g*m*n^3*x)/(8*e) - (45*b^3*g*i*m*n
^3*x)/(8*j) + (3*b^3*g*m*n^3*x^2)/8 - (3*b^3*f*n^3*(d + e*x)^2)/(8*e^2) + (
3*b^3*g*m*n^3*(d + e*x)^2)/(8*e^2) + (3*b^3*d^2*g*m*n^3*Log[d + e*x])/(8*e^
2) - (6*b^3*d*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^2 + (12*b^3*d*g*m*n^2*(
d + e*x)*Log[c*(d + e*x)^n])/e^2 + (21*b^3*g*i*m*n^2*(d + e*x)*Log[c*(d + e
*x)^n])/(4*e*j) - (3*b^2*g*m*n^2*x^2*(a + b*Log[c*(d + e*x)^n]))/8 + (3*b^2
*f*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) - (3*b^2*g*m*n^2*(d
+ e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) + (3*b*d*f*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e^2 - (15*b*d*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)
^n])^2)/(4*e^2) - (9*b*g*i*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*e
*j) - (3*b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (3*b*g*m
*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) - (d^2*f*(a + b*Log[c*
(d + e*x)^n])^3)/(2*e^2) + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(
2*e^2) + (g*i*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(2*e*j) - (g*m*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^2) + (3*b^3*g*i^2*m*n^3*Log[i +
j*x])/(8*j^2) - (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j
*x))/(e*i - d*j)])/(4*j^2) - (9*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) - (9*b*d^2*g*m*n*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*e^2) + (3*b*g*i^2*m*n*(a + b*
Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*j^2) + (3*b*d*g*i*
m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) +
(d^2*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e^
2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/
(2*j^2) - (3*b^3*g*n^3*x^2*Log[h*(i + j*x)^m])/8 + (21*b^3*d*g*n^3*(i + j*x
)*Log[h*(i + j*x)^m])/(4*e*j) - (21*b^3*d^2*g*n^3*Log[-((j*(d + e*x))/(e*i
- d*j))]*Log[h*(i + j*x)^m])/(4*e^2) - (9*b^2*d*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m])/(2*e) + (3*b^2*g*n^2*x^2*(a + b*Log[c*(d + e*x)
^n])*Log[h*(i + j*x)^m])/4 + (9*b*d^2*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[
h*(i + j*x)^m])/(4*e^2) + (3*b*d*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(
i + j*x)^m])/(2*e) - (3*b*g*n*x^2*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j
*x)^m])/4 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/(2*e^2)
 + (x^2*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/2 - (3*b^3
*g*i^2*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^2) - (9*b^3*d*g
*i*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e*j) - (9*b^2*d^2*g*m
*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*e^2) + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(2*j^2) + (3*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (3*b*d^2*g*m*n*(a + b*
Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e^2) - (
3*b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
- d*j))])/(2*j^2) - (21*b^3*d^2*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j
)])/(4*e^2) + (9*b^3*d^2*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/
(2*e^2) - (3*b^3*g*i^2*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(2*j
^2) - (3*b^3*d*g*i*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(e*j) -
(3*b^2*d^2*g*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e
*i - d*j))])/e^2 + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3,
 -((j*(d + e*x))/(e*i - d*j))])/j^2 + (3*b^3*d^2*g*m*n^3*PolyLog[4, -((j*(d
 + e*x))/(e*i - d*j))])/e^2 - (3*b^3*g*i^2*m*n^3*PolyLog[4, -((j*(d + e*x))
/(e*i - d*j))])/j^2
```

Rubi [A] time = 6.89069, antiderivative size = 2050, normalized size of antiderivative = 1., number of steps used = 148, number of rules used = 32, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1., Rules used = {2439, 2416, 2389, 2296, 2295, 2401, 2390, 2305, 2304, 2396, 2433, 2374, 2383, 6589, 6742, 2411, 2346, 2302, 30, 2330, 2430, 2301, 43, 2394, 2393, 2391, 2375, 2317, 2334, 12, 14, 2395}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-6*a*b^2*d*f*n^2*x)/e + (12*a*b^2*d*g*m*n^2*x)/e + (21*a*b^2*g*i*m*n^2*x)/
(4*j) + (6*b^3*d*f*n^3*x)/e - (141*b^3*d*g*m*n^3*x)/(8*e) - (45*b^3*g*i*m*n
^3*x)/(8*j) + (3*b^3*g*m*n^3*x^2)/8 - (3*b^3*f*n^3*(d + e*x)^2)/(8*e^2) + (
3*b^3*g*m*n^3*(d + e*x)^2)/(8*e^2) + (3*b^3*d^2*g*m*n^3*Log[d + e*x])/(8*e^
2) - (6*b^3*d*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e^2 + (12*b^3*d*g*m*n^2*(
d + e*x)*Log[c*(d + e*x)^n])/e^2 + (21*b^3*g*i*m*n^2*(d + e*x)*Log[c*(d + e
*x)^n])/(4*e*j) - (3*b^2*g*m*n^2*x^2*(a + b*Log[c*(d + e*x)^n]))/8 + (3*b^2
*f*n^2*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) - (3*b^2*g*m*n^2*(d
+ e*x)^2*(a + b*Log[c*(d + e*x)^n]))/(4*e^2) + (3*b*d*f*n*(d + e*x)*(a + b*
Log[c*(d + e*x)^n])^2)/e^2 - (15*b*d*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)
^n])^2)/(4*e^2) - (9*b*g*i*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/(4*e
*j) - (3*b*f*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) + (3*b*g*m
*n*(d + e*x)^2*(a + b*Log[c*(d + e*x)^n])^2)/(4*e^2) - (d^2*f*(a + b*Log[c*
(d + e*x)^n])^3)/(2*e^2) + (d*g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(
2*e^2) + (g*i*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/(2*e*j) - (g*m*(d +
 e*x)^2*(a + b*Log[c*(d + e*x)^n])^3)/(4*e^2) + (3*b^3*g*i^2*m*n^3*Log[i +
j*x])/(8*j^2) - (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j
*x))/(e*i - d*j)])/(4*j^2) - (9*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*
Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) - (9*b*d^2*g*m*n*(a + b*Log[c*(d +
e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*e^2) + (3*b*g*i^2*m*n*(a + b*
Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(4*j^2) + (3*b*d*g*i*
m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e*j) +
(d^2*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/(2*e^
2) - (g*i^2*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/
(2*j^2) - (3*b^3*g*n^3*x^2*Log[h*(i + j*x)^m])/8 + (21*b^3*d*g*n^3*(i + j*x
)*Log[h*(i + j*x)^m])/(4*e*j) - (21*b^3*d^2*g*n^3*Log[-((j*(d + e*x))/(e*i
- d*j))]*Log[h*(i + j*x)^m])/(4*e^2) - (9*b^2*d*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m])/(2*e) + (3*b^2*g*n^2*x^2*(a + b*Log[c*(d + e*x)
^n])*Log[h*(i + j*x)^m])/4 + (9*b*d^2*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[
h*(i + j*x)^m])/(4*e^2) + (3*b*d*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(
i + j*x)^m])/(2*e) - (3*b*g*n*x^2*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j
*x)^m])/4 - (d^2*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/(2*e^2)
 + (x^2*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/2 - (3*b^3
*g*i^2*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(4*j^2) - (9*b^3*d*g
*i*m*n^3*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e*j) - (9*b^2*d^2*g*m
*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(
2*e^2) + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((j*(d +
 e*x))/(e*i - d*j))])/(2*j^2) + (3*b^2*d*g*i*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(e*j) + (3*b*d^2*g*m*n*(a + b*
Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/(2*e^2) - (
3*b*g*i^2*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
- d*j))])/(2*j^2) - (21*b^3*d^2*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j
)])/(4*e^2) + (9*b^3*d^2*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/
(2*e^2) - (3*b^3*g*i^2*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(2*j
^2) - (3*b^3*d*g*i*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/(e*j) -
(3*b^2*d^2*g*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e
*i - d*j))])/e^2 + (3*b^2*g*i^2*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3,
```

```
-((j*(d + e*x))/(e*i - d*j))])/j^2 + (3*b^3*d^2*g*m*n^3*PolyLog[4, -((j*(d
 + e*x))/(e*i - d*j))])/e^2 - (3*b^3*g*i^2*m*n^3*PolyLog[4, -((j*(d + e*x))
/(e*i - d*j))])/j^2
```

Rule 2439

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*(x_)^(r_.), x_Symbol] :> Simp[(x^
(r + 1)*(a + b*Log[c*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]))/(r + 1), x
] + (-Dist[(g*j*m)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d + e*x)^n])^p)/(i
 + j*x), x], x] - Dist[(b*e*n*p)/(r + 1), Int[(x^(r + 1)*(a + b*Log[c*(d +
e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /; FreeQ[{a
, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0] && IntegerQ[r] && (EqQ
[p, 1] || GtQ[r, 0]) && NeQ[r, -1]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
```

```
c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2330

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_)^(r_.))^(
q_.), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*x^n])^p, (d + e*x
^r)^q, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n, p, q, r}, x]
&& IntegerQ[q] && (GtQ[q, 0] || (IGtQ[p, 0] && IntegerQ[r]))
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rubi steps

$$\int x\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx)^m\right)\right)\,dx=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx)^m\right)\right)-$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx)^m\right)\right)-$$

$$=\frac{1}{2}x^2\left(a+b\log\left(c(d+ex)^n\right)\right)^3\left(f+g\log\left(h(397+jx)^m\right)\right)-$$

$$=-\frac{157609gm\left(a+b\log\left(c(d+ex)^n\right)\right)^3\log\left(\frac{e(397+jx)}{397e-dj}\right)}{2j^2}+\frac{1}{2}x$$

$$=\frac{397gm(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^3}{2ej}-\frac{157609gm\,(a$$

$$=-\frac{1191bgmn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2ej}+\frac{397gm(d}{}$$

$$=\frac{1191ab^2gmn^2x}{j}+\frac{3bdfn(d+ex)\left(a+b\log\left(c(d+ex)^n\right)\right)^2}{2e^2}$$

$$=-\frac{3ab^2dfn^2x}{e}+\frac{1191ab^2gmn^2x}{j}-\frac{1191b^3gmn^3x}{j}+\frac{1191b}{}$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{3ab^2dgmn^2x}{e}+\frac{1191ab^2gmn^2x}{j}+\frac{3b^3df}{e}$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{3ab^2dgmn^2x}{e}+\frac{1191ab^2gmn^2x}{j}+\frac{6b^3df}{e}$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{6ab^2dgmn^2x}{e}+\frac{3573ab^2gmn^2x}{2j}+\frac{6b^3df}{e}$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{21ab^2dgmn^2x}{2e}+\frac{8337ab^2gmn^2x}{4j}+\frac{6b^3d}{}$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{12ab^2dgmn^2x}{e}+\frac{8337ab^2gmn^2x}{4j}+\frac{6b^3d}{}$$

$$=-\frac{6ab^2dfn^2x}{e}+\frac{12ab^2dgmn^2x}{e}+\frac{8337ab^2gmn^2x}{4j}+\frac{6b^3d}{}$$

Mathematica [B] time = 3.38738, size = 4971, normalized size = 2.42

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-12*a^2*b*d*e*g*i*j*m*n + 12*a*b^2*d*e*g*i*j*m*n^2 + 24*a*b^2*d^2*g*j^2*m*
n^2 - 6*b^3*d*e*g*i*j*m*n^3 - 36*b^3*d^2*g*j^2*m*n^3 + 4*a^3*e^2*g*i*j*m*x
+ 12*a^2*b*d*e*f*j^2*n*x - 18*a^2*b*e^2*g*i*j*m*n*x - 18*a^2*b*d*e*g*j^2*m*
n*x - 36*a*b^2*d*e*f*j^2*n^2*x + 42*a*b^2*e^2*g*i*j*m*n^2*x + 84*a*b^2*d*e*
g*j^2*m*n^2*x + 42*b^3*d*e*f*j^2*n^3*x - 45*b^3*e^2*g*i*j*m*n^3*x - 135*b^3
*d*e*g*j^2*m*n^3*x + 4*a^3*e^2*f*j^2*x^2 - 2*a^3*e^2*g*j^2*m*x^2 - 6*a^2*b*
e^2*f*j^2*n*x^2 + 6*a^2*b*e^2*g*j^2*m*n*x^2 + 6*a*b^2*e^2*f*j^2*n^2*x^2 - 9
*a*b^2*e^2*g*j^2*m*n^2*x^2 - 3*b^3*e^2*f*j^2*n^3*x^2 + 6*b^3*e^2*g*j^2*m*n^
3*x^2 - 12*a^2*b*d^2*f*j^2*n*Log[d + e*x] + 12*a^2*b*d*e*g*i*j*m*n*Log[d +
e*x] + 6*a^2*b*d^2*g*j^2*m*n*Log[d + e*x] + 36*a*b^2*d^2*f*j^2*n^2*Log[d +
e*x] - 12*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x] - 48*a*b^2*d^2*g*j^2*m*n^2*Log
[d + e*x] - 42*b^3*d^2*f*j^2*n^3*Log[d + e*x] + 30*b^3*d*e*g*i*j*m*n^3*Log[
d + e*x] + 69*b^3*d^2*g*j^2*m*n^3*Log[d + e*x] + 12*a*b^2*d^2*f*j^2*n^2*Log
[d + e*x]^2 - 12*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]^2 - 6*a*b^2*d^2*g*j^2*m
*n^2*Log[d + e*x]^2 - 18*b^3*d^2*f*j^2*n^3*Log[d + e*x]^2 + 6*b^3*d*e*g*i*j
*m*n^3*Log[d + e*x]^2 + 24*b^3*d^2*g*j^2*m*n^3*Log[d + e*x]^2 - 4*b^3*d^2*f
*j^2*n^3*Log[d + e*x]^3 + 4*b^3*d*e*g*i*j*m*n^3*Log[d + e*x]^3 + 2*b^3*d^2*
g*j^2*m*n^3*Log[d + e*x]^3 - 24*a*b^2*d*e*g*i*j*m*n*Log[c*(d + e*x)^n] + 12
*b^3*d*e*g*i*j*m*n^2*Log[c*(d + e*x)^n] + 24*b^3*d^2*g*j^2*m*n^2*Log[c*(d +
 e*x)^n] + 12*a^2*b*e^2*g*i*j*m*x*Log[c*(d + e*x)^n] + 24*a*b^2*d*e*f*j^2*n
*x*Log[c*(d + e*x)^n] - 36*a*b^2*e^2*g*i*j*m*n*x*Log[c*(d + e*x)^n] - 36*a*
b^2*d*e*g*j^2*m*n*x*Log[c*(d + e*x)^n] - 36*b^3*d*e*f*j^2*n^2*x*Log[c*(d +
e*x)^n] + 42*b^3*e^2*g*i*j*m*n^2*x*Log[c*(d + e*x)^n] + 84*b^3*d*e*g*j^2*m*
n^2*x*Log[c*(d + e*x)^n] + 12*a^2*b*e^2*f*j^2*x^2*Log[c*(d + e*x)^n] - 6*a^
2*b*e^2*g*j^2*m*x^2*Log[c*(d + e*x)^n] - 12*a*b^2*e^2*f*j^2*n*x^2*Log[c*(d
+ e*x)^n] + 12*a*b^2*e^2*g*j^2*m*n*x^2*Log[c*(d + e*x)^n] + 6*b^3*e^2*f*j^2
*n^2*x^2*Log[c*(d + e*x)^n] - 9*b^3*e^2*g*j^2*m*n^2*x^2*Log[c*(d + e*x)^n]
- 24*a*b^2*d^2*f*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 24*a*b^2*d*e*g*i*j
*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 12*a*b^2*d^2*g*j^2*m*n*Log[d + e*x]*
Log[c*(d + e*x)^n] + 36*b^3*d^2*f*j^2*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] -
 12*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] - 48*b^3*d^2*g*j^2*
m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n] + 12*b^3*d^2*f*j^2*n^2*Log[d + e*x]^2
*Log[c*(d + e*x)^n] - 12*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)
^n] - 6*b^3*d^2*g*j^2*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n] - 12*b^3*d*e*
g*i*j*m*n*Log[c*(d + e*x)^n]^2 + 12*a*b^2*e^2*g*i*j*m*x*Log[c*(d + e*x)^n]^
2 + 12*b^3*d*e*f*j^2*n*x*Log[c*(d + e*x)^n]^2 - 18*b^3*e^2*g*i*j*m*n*x*Log[
c*(d + e*x)^n]^2 - 18*b^3*d*e*g*j^2*m*n*x*Log[c*(d + e*x)^n]^2 + 12*a*b^2*e
^2*f*j^2*x^2*Log[c*(d + e*x)^n]^2 - 6*a*b^2*e^2*g*j^2*m*x^2*Log[c*(d + e*x)
^n]^2 - 6*b^3*e^2*f*j^2*n*x^2*Log[c*(d + e*x)^n]^2 + 6*b^3*e^2*g*j^2*m*n*x^
2*Log[c*(d + e*x)^n]^2 - 12*b^3*d^2*f*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n]
^2 + 12*b^3*d*e*g*i*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 + 6*b^3*d^2*g*j
^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 + 4*b^3*e^2*g*i*j*m*x*Log[c*(d + e
*x)^n]^3 + 4*b^3*e^2*f*j^2*x^2*Log[c*(d + e*x)^n]^3 - 2*b^3*e^2*g*j^2*m*x^2
*Log[c*(d + e*x)^n]^3 - 4*a^3*e^2*g*i^2*m*Log[i + j*x] + 6*a^2*b*e^2*g*i^2*
m*n*Log[i + j*x] + 12*a^2*b*d*e*g*i*j*m*n*Log[i + j*x] - 6*a*b^2*e^2*g*i^2*
m*n^2*Log[i + j*x] - 36*a*b^2*d*e*g*i*j*m*n^2*Log[i + j*x] + 3*b^3*e^2*g*i^
2*m*n^3*Log[i + j*x] + 42*b^3*d*e*g*i*j*m*n^3*Log[i + j*x] + 12*a^2*b*e^2*g
*i^2*m*n*Log[d + e*x]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*
Log[i + j*x] - 24*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[i + j*x] + 6*b^3*e
^2*g*i^2*m*n^3*Log[d + e*x]*Log[i + j*x] + 36*b^3*d*e*g*i*j*m*n^3*Log[d + e
*x]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[i + j*x] + 6
```

*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]^2*Log[i + j*x] + 12*b^3*d*e*g*i*j*m*n^3*L
og[d + e*x]^2*Log[i + j*x] + 4*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]^3*Log[i + j
*x] - 12*a^2*b*e^2*g*i^2*m*Log[c*(d + e*x)^n]*Log[i + j*x] + 12*a*b^2*e^2*g
*i^2*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 24*a*b^2*d*e*g*i*j*m*n*Log[c*(d
+ e*x)^n]*Log[i + j*x] - 6*b^3*e^2*g*i^2*m*n^2*Log[c*(d + e*x)^n]*Log[i + j
*x] - 36*b^3*d*e*g*i*j*m*n^2*Log[c*(d + e*x)^n]*Log[i + j*x] + 24*a*b^2*e^2
*g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*b^3*e^2*g*i^2*
m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 24*b^3*d*e*g*i*j*m*n^2
*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*b^3*e^2*g*i^2*m*n^2*Log[
d + e*x]^2*Log[c*(d + e*x)^n]*Log[i + j*x] - 12*a*b^2*e^2*g*i^2*m*Log[c*(d
+ e*x)^n]^2*Log[i + j*x] + 6*b^3*e^2*g*i^2*m*n*Log[c*(d + e*x)^n]^2*Log[i +
 j*x] + 12*b^3*d*e*g*i*j*m*n*Log[c*(d + e*x)^n]^2*Log[i + j*x] + 12*b^3*e^2
*g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 4*b^3*e^2*g*i^2
*m*Log[c*(d + e*x)^n]^3*Log[i + j*x] - 12*a^2*b*e^2*g*i^2*m*n*Log[d + e*x]*
Log[(e*(i + j*x))/(e*i - d*j)] + 12*a^2*b*d^2*g*j^2*m*n*Log[d + e*x]*Log[(e
*(i + j*x))/(e*i - d*j)] + 12*a*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[(e*(i
+ j*x))/(e*i - d*j)] + 24*a*b^2*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*
x))/(e*i - d*j)] - 36*a*b^2*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/
(e*i - d*j)] - 6*b^3*e^2*g*i^2*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i -
d*j)] - 36*b^3*d*e*g*i*j*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)]
+ 42*b^3*d^2*g*j^2*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 12*a
*b^2*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 12*a*b
^2*d^2*g*j^2*m*n^2*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 6*b^3*e^
2*g*i^2*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 12*b^3*d*e*g*
i*j*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] + 18*b^3*d^2*g*j^2*
m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 4*b^3*e^2*g*i^2*m*n^3
*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] + 4*b^3*d^2*g*j^2*m*n^3*Log[
d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] - 24*a*b^2*e^2*g*i^2*m*n*Log[d +
e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 24*a*b^2*d^2*g*j^2
*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 12*b^
3*e^2*g*i^2*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i -
d*j)] + 24*b^3*d*e*g*i*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i +
j*x))/(e*i - d*j)] - 36*b^3*d^2*g*j^2*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]
Log[(e(i + j*x))/(e*i - d*j)] + 12*b^3*e^2*g*i^2*m*n^2*Log[d + e*x]^2*Log
[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 12*b^3*d^2*g*j^2*m*n^2*Log
[d + e*x]^2*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 12*b^3*e^2*
g*i^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)]
+ 12*b^3*d^2*g*j^2*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/
(e*i - d*j)] + 12*a^2*b*d*e*g*j^2*n*x*Log[h*(i + j*x)^m] - 36*a*b^2*d*e*g*j
^2*n^2*x*Log[h*(i + j*x)^m] + 42*b^3*d*e*g*j^2*n^3*x*Log[h*(i + j*x)^m] + 4
*a^3*e^2*g*j^2*x^2*Log[h*(i + j*x)^m] - 6*a^2*b*e^2*g*j^2*n*x^2*Log[h*(i +
j*x)^m] + 6*a*b^2*e^2*g*j^2*n^2*x^2*Log[h*(i + j*x)^m] - 3*b^3*e^2*g*j^2*n^
3*x^2*Log[h*(i + j*x)^m] - 12*a^2*b*d^2*g*j^2*n*Log[d + e*x]*Log[h*(i + j*x
)^m] + 36*a*b^2*d^2*g*j^2*n^2*Log[d + e*x]*Log[h*(i + j*x)^m] - 42*b^3*d^2*
g*j^2*n^3*Log[d + e*x]*Log[h*(i + j*x)^m] + 12*a*b^2*d^2*g*j^2*n^2*Log[d +
e*x]^2*Log[h*(i + j*x)^m] - 18*b^3*d^2*g*j^2*n^3*Log[d + e*x]^2*Log[h*(i +
j*x)^m] - 4*b^3*d^2*g*j^2*n^3*Log[d + e*x]^3*Log[h*(i + j*x)^m] + 24*a*b^2*
d*e*g*j^2*n*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 36*b^3*d*e*g*j^2*n^2*
x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 12*a^2*b*e^2*g*j^2*x^2*Log[c*(d +
 e*x)^n]*Log[h*(i + j*x)^m] - 12*a*b^2*e^2*g*j^2*n*x^2*Log[c*(d + e*x)^n]*L
og[h*(i + j*x)^m] + 6*b^3*e^2*g*j^2*n^2*x^2*Log[c*(d + e*x)^n]*Log[h*(i + j
*x)^m] - 24*a*b^2*d^2*g*j^2*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*
x)^m] + 36*b^3*d^2*g*j^2*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*x
)^m] + 12*b^3*d^2*g*j^2*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[h*(i + j*
x)^m] + 12*b^3*d*e*g*j^2*n*x*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 12*a
*b^2*e^2*g*j^2*x^2*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] - 6*b^3*e^2*g*j^
2*n*x^2*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] - 12*b^3*d^2*g*j^2*n*Log[d
+ e*x]*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 4*b^3*e^2*g*j^2*x^2*Log[c*
(d + e*x)^n]^3*Log[h*(i + j*x)^m] - 6*b*g*(e*i - d*j)*m*n*(2*a^2*(e*i + d*j

```
) - 2*a*b*(e*i + 3*d*j)*n + b^2*(e*i + 7*d*j)*n^2 - 2*b*(-2*a*(e*i + d*j) +
 b*(e*i + 3*d*j)*n)*Log[c*(d + e*x)^n] + 2*b^2*(e*i + d*j)*Log[c*(d + e*x)^
n]^2)*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] + 12*b^2*g*(e*i - d*j)*m*n^2
*(2*a*(e*i + d*j) - b*(e*i + 3*d*j)*n + 2*b*(e*i + d*j)*Log[c*(d + e*x)^n])
*PolyLog[3, (j*(d + e*x))/(-(e*i) + d*j)] - 24*b^3*e^2*g*i^2*m*n^3*PolyLog[
4, (j*(d + e*x))/(-(e*i) + d*j)] + 24*b^3*d^2*g*j^2*m*n^3*PolyLog[4, (j*(d
+ e*x))/(-(e*i) + d*j)])/(8*e^2*j^2)
```

Maple [F] time = 2.901, size = 0, normalized size = 0.

$$\int x\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}\left(f+g\ln\left(h\left(jx+i\right)^{m}\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] int(x*(a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="m
axima")
```

```
[Out] 1/2*b^3*f*x^2*log((e*x + d)^n*c)^3 + 3/2*a*b^2*f*x^2*log((e*x + d)^n*c)^2 -
 3/4*a^2*b*e*f*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2) - 1/4*a^3*g
*j*m*(2*i^2*log(j*x + i)/j^3 + (j*x^2 - 2*i*x)/j^2) + 3/2*a^2*b*f*x^2*log((
e*x + d)^n*c) + 1/2*a^3*g*x^2*log((j*x + i)^m*h) + 1/2*a^3*f*x^2 - 3/4*(2*e
*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)^n*c) - (e^2
*x^2 + 2*d^2*log(e*x + d)^2 - 6*d*e*x + 6*d^2*log(e*x + d))*n^2/e^2)*a*b^2*
f - 1/8*(6*e*n*(2*d^2*log(e*x + d)/e^3 + (e*x^2 - 2*d*x)/e^2)*log((e*x + d)
^n*c)^2 + e*n*((4*d^2*log(e*x + d)^3 + 3*e^2*x^2 + 18*d^2*log(e*x + d)^2 -
42*d*e*x + 42*d^2*log(e*x + d))*n^2/e^3 - 6*(e^2*x^2 + 2*d^2*log(e*x + d)^2
 - 6*d*e*x + 6*d^2*log(e*x + d))*n*log((e*x + d)^n*c)/e^3))*b^3*f + 1/8*(2*
(2*b^3*e^2*g*i*j*m*x - 2*b^3*e^2*g*i^2*m*log(j*x + i) - (j^2*m - 2*j^2*log(
h))*b^3*e^2*g*x^2)*log((e*x + d)^n)^3 - (4*b^3*d^2*g*j^2*n^3*log(e*x + d)^3
 - 4*b^3*e^2*g*j^2*x^2*log((e*x + d)^n)^3 + (6*(e^2*g*j^2*n - 2*e^2*g*j^2*l
og(c))*a^2*b - 6*(e^2*g*j^2*n^2 - 2*e^2*g*j^2*n*log(c) + 2*e^2*g*j^2*log(c)
^2)*a*b^2 + (3*e^2*g*j^2*n^3 - 6*e^2*g*j^2*n^2*log(c) + 6*e^2*g*j^2*n*log(c
)^2 - 4*e^2*g*j^2*log(c)^3)*b^3)*x^2 - 6*(2*a*b^2*d^2*g*j^2*n^2 - (3*d^2*g*
j^2*n^3 - 2*d^2*g*j^2*n^2*log(c))*b^3)*log(e*x + d)^2 - 6*(2*b^3*d*e*g*j^2*
n*x - 2*b^3*d^2*g*j^2*n*log(e*x + d) + (2*a*b^2*e^2*g*j^2 - (e^2*g*j^2*n -
2*e^2*g*j^2*log(c))*b^3)*x^2)*log((e*x + d)^n)^2 - 6*(2*a^2*b*d*e*g*j^2*n -
 2*(3*d*e*g*j^2*n^2 - 2*d*e*g*j^2*n*log(c))*a*b^2 + (7*d*e*g*j^2*n^3 - 6*d*
e*g*j^2*n^2*log(c) + 2*d*e*g*j^2*n*log(c)^2)*b^3)*x + 6*(2*a^2*b*d^2*g*j^2*
n - 2*(3*d^2*g*j^2*n^2 - 2*d^2*g*j^2*n*log(c))*a*b^2 + (7*d^2*g*j^2*n^3 - 6
*d^2*g*j^2*n^2*log(c) + 2*d^2*g*j^2*n*log(c)^2)*b^3)*log(e*x + d) - 6*(2*b^
3*d^2*g*j^2*n^2*log(e*x + d)^2 + (2*a^2*b*e^2*g*j^2 - 2*(e^2*g*j^2*n - 2*e^
2*g*j^2*log(c))*a*b^2 + (e^2*g*j^2*n^2 - 2*e^2*g*j^2*n*log(c) + 2*e^2*g*j^2
*log(c)^2)*b^3)*x^2 + 2*(2*a*b^2*d*e*g*j^2*n - (3*d*e*g*j^2*n^2 - 2*d*e*g*j
^2*n*log(c))*b^3)*x - 2*(2*a*b^2*d^2*g*j^2*n - (3*d^2*g*j^2*n^2 - 2*d^2*g*j
```

```
^2*n*log(c))*b^3)*log(e*x + d))*log((e*x + d)^n))*log((j*x + i)^m))/(e^2*j^
2) + integrate(1/8*((6*(e^3*g*j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*e^3*g*log(
c))*a^2*b - 6*(e^3*g*j^3*m*n^2 - 2*e^3*g*j^3*m*n*log(c) + 2*(j^3*m - 2*j^3*
log(h))*e^3*g*log(c)^2)*a*b^2 + (3*e^3*g*j^3*m*n^3 - 6*e^3*g*j^3*m*n^2*log(
c) + 6*e^3*g*j^3*m*n*log(c)^2 - 4*(j^3*m - 2*j^3*log(h))*e^3*g*log(c)^3)*b^
3)*x^3 + 4*(b^3*d^2*e*g*j^3*m*n^3*x + b^3*d^3*g*j^3*m*n^3)*log(e*x + d)^3 -
 (6*(d*e^2*g*j^3*m*n - 2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e
^2*g)*log(c))*a^2*b - 6*(5*d*e^2*g*j^3*m*n^2 - 2*d*e^2*g*j^3*m*n*log(c) + 2
*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c)^2)*a*b^2 +
(39*d*e^2*g*j^3*m*n^3 - 30*d*e^2*g*j^3*m*n^2*log(c) + 6*d*e^2*g*j^3*m*n*log
(c)^2 - 4*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c)^3)
*b^3)*x^2 - 6*(2*a*b^2*d^3*g*j^3*m*n^2 - (3*d^3*g*j^3*m*n^3 - 2*d^3*g*j^3*m
*n^2*log(c))*b^3 + (2*a*b^2*d^2*e*g*j^3*m*n^2 - (3*d^2*e*g*j^3*m*n^3 - 2*d^
2*e*g*j^3*m*n^2*log(c))*b^3)*x)*log(e*x + d)^2 - 6*(2*((j^3*m - 2*j^3*log(h
))*a*b^2*e^3*g + ((j^3*m - 2*j^3*log(h))*e^3*g*log(c) - (j^3*m*n - j^3*n*lo
g(h))*e^3*g)*b^3)*x^3 - (2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d
*e^2*g)*a*b^2 - (d*e^2*g*j^3*m*n + (i*j^2*m*n + 2*i*j^2*n*log(h))*e^3*g - 2
*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*b^3)*x^2 -
 2*(2*a*b^2*d*e^2*g*i*j^2*log(h) - (e^3*g*i^2*j*m*n + d^2*e*g*j^3*m*n - 2*d
*e^2*g*i*j^2*log(c)*log(h))*b^3)*x - 2*(b^3*d^2*e*g*j^3*m*n*x + b^3*d^3*g*j
^3*m*n)*log(e*x + d) - 2*(b^3*e^3*g*i^2*j*m*n*x + b^3*e^3*g*i^3*m*n)*log(j*
x + i))*log((e*x + d)^n)^2 - 2*(6*(d^2*e*g*j^3*m*n - 2*d*e^2*g*i*j^2*log(c)
*log(h))*a^2*b - 6*(3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g*j^3*m*n*log(c) + 2*d*e^
2*g*i*j^2*log(c)^2*log(h))*a*b^2 + (21*d^2*e*g*j^3*m*n^3 - 18*d^2*e*g*j^3*m
*n^2*log(c) + 6*d^2*e*g*j^3*m*n*log(c)^2 - 4*d*e^2*g*i*j^2*log(c)^3*log(h))
*b^3)*x + 6*(2*a^2*b*d^3*g*j^3*m*n - 2*(3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n
*log(c))*a*b^2 + (7*d^3*g*j^3*m*n^3 - 6*d^3*g*j^3*m*n^2*log(c) + 2*d^3*g*j^
3*m*n*log(c)^2)*b^3 + (2*a^2*b*d^2*e*g*j^3*m*n - 2*(3*d^2*e*g*j^3*m*n^2 - 2
*d^2*e*g*j^3*m*n*log(c))*a*b^2 + (7*d^2*e*g*j^3*m*n^3 - 6*d^2*e*g*j^3*m*n^2
*log(c) + 2*d^2*e*g*j^3*m*n*log(c)^2)*b^3)*x)*log(e*x + d) - 6*((2*(j^3*m -
 2*j^3*log(h))*a^2*b*e^3*g - 2*(e^3*g*j^3*m*n - 2*(j^3*m - 2*j^3*log(h))*e^
3*g*log(c))*a*b^2 + (e^3*g*j^3*m*n^2 - 2*e^3*g*j^3*m*n*log(c) + 2*(j^3*m -
2*j^3*log(h))*e^3*g*log(c)^2)*b^3)*x^3 - (2*(2*e^3*g*i*j^2*log(h) - (j^3*m
- 2*j^3*log(h))*d*e^2*g)*a^2*b - 2*(d*e^2*g*j^3*m*n - 2*(2*e^3*g*i*j^2*log(
h) - (j^3*m - 2*j^3*log(h))*d*e^2*g)*log(c))*a*b^2 + (5*d*e^2*g*j^3*m*n^2 -
 2*d*e^2*g*j^3*m*n*log(c) + 2*(2*e^3*g*i*j^2*log(h) - (j^3*m - 2*j^3*log(h)
)*d*e^2*g)*log(c)^2)*b^3)*x^2 + 2*(b^3*d^2*e*g*j^3*m*n^2*x + b^3*d^3*g*j^3*
m*n^2)*log(e*x + d)^2 - 2*(2*a^2*b*d*e^2*g*i*j^2*log(h) - 2*(d^2*e*g*j^3*m*
n - 2*d*e^2*g*i*j^2*log(c)*log(h))*a*b^2 + (3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g
*j^3*m*n*log(c) + 2*d*e^2*g*i*j^2*log(c)^2*log(h))*b^3)*x - 2*(2*a*b^2*d^3*
g*j^3*m*n - (3*d^3*g*j^3*m*n^2 - 2*d^3*g*j^3*m*n*log(c))*b^3 + (2*a*b^2*d^2
*e*g*j^3*m*n - (3*d^2*e*g*j^3*m*n^2 - 2*d^2*e*g*j^3*m*n*log(c))*b^3)*x)*log
(e*x + d))*log((e*x + d)^n))/(e^3*j^3*x^2 + d*e^2*i*j^2 + (e^3*i*j^2 + d*e^
2*j^3)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(b^3fx\log\left((ex+d)^nc\right)^3+3\,ab^2fx\log\left((ex+d)^nc\right)^2+3\,a^2bfx\log\left((ex+d)^nc\right)+a^3fx+\left(b^3gx\log\left((ex+d)^nc\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="f
ricas")
```

```
[Out] integral(b^3*f*x*log((e*x + d)^n*c)^3 + 3*a*b^2*f*x*log((e*x + d)^n*c)^2 +
3*a^2*b*f*x*log((e*x + d)^n*c) + a^3*f*x + (b^3*g*x*log((e*x + d)^n*c)^3 +
3*a*b^2*g*x*log((e*x + d)^n*c)^2 + 3*a^2*b*g*x*log((e*x + d)^n*c) + a^3*g*x
```

```
)*log((j*x + i)^m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^3 \left(g\log\left((jx+i)^m h\right)+f\right)x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f)*x, x)
```

3.398 $\int (a+b\log(c(d+ex)^n))^3 \left(f+g\log\left(h(i+jx)^m\right)\right) dx$

Optimal. Leaf size=1147

result too large to display

```
[Out] 6*a*b^2*f*n^2*x - 18*a*b^2*g*m*n^2*x - 6*b^3*f*n^3*x + 24*b^3*g*m*n^3*x + (
6*b^3*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e - (18*b^3*g*m*n^2*(d + e*x)*Log
[c*(d + e*x)^n])/e - (3*b*f*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (
6*b*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (d*f*(a + b*Log[c*(d
+ e*x)^n])^3)/e - (g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e + (6*b^2*g
*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j + (3*
b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/e -
(3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/j
 - (d*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/e +
(g*i*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/j - (6*
b^3*g*n^3*(i + j*x)*Log[h*(i + j*x)^m])/j + (6*b^3*d*g*n^3*Log[-((j*(d + e*
x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e + 6*b^2*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m] - (3*b*d*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[h*
(i + j*x)^m])/e - 3*b*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*x)^m]
 + (d*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c
*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]) + (6*b^3*g*i*m*n^3*PolyLog[2, -
((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*i*m*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (3*b*d*g*m*
n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e
+ (3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
 - d*j))])/j + (6*b^3*d*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e -
(6*b^3*d*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3*g*i*m
*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*
Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*
i*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))]
)/j - (6*b^3*d*g*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3
*g*i*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rubi [A] time = 3.12295, antiderivative size = 1147, normalized size of antiderivative = 1., number of steps used = 64, number of rules used = 22, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.71, Rules used = {2430, 2416, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 6742, 2411, 2346, 2302, 30, 2301, 43, 2394, 2393, 2391, 2375, 2317}

$$-6fn^3xb^3+24gmn^3xb^3+\frac{6fn^2(d+ex)\log(c(d+ex)^n)\,b^3}{e}-\frac{18gmn^2(d+ex)\log(c(d+ex)^n)\,b^3}{e}-\frac{6gn^3(i+jx)\log\left(h\right.}{j}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```


```
[Out] 6*a*b^2*f*n^2*x - 18*a*b^2*g*m*n^2*x - 6*b^3*f*n^3*x + 24*b^3*g*m*n^3*x + (
6*b^3*f*n^2*(d + e*x)*Log[c*(d + e*x)^n])/e - (18*b^3*g*m*n^2*(d + e*x)*Log
[c*(d + e*x)^n])/e - (3*b*f*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (
6*b*g*m*n*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^2)/e + (d*f*(a + b*Log[c*(d
+ e*x)^n])^3)/e - (g*m*(d + e*x)*(a + b*Log[c*(d + e*x)^n])^3)/e + (6*b^2*g
*i*m*n^2*(a + b*Log[c*(d + e*x)^n])*Log[(e*(i + j*x))/(e*i - d*j)])/j + (3*
b*d*g*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/e -
(3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*Log[(e*(i + j*x))/(e*i - d*j)])/j
 - (d*g*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/e +
```

```
(g*i*m*(a + b*Log[c*(d + e*x)^n])^3*Log[(e*(i + j*x))/(e*i - d*j)])/j - (6*
b^3*g*n^3*(i + j*x)*Log[h*(i + j*x)^m])/j + (6*b^3*d*g*n^3*Log[-((j*(d + e*
x))/(e*i - d*j))]*Log[h*(i + j*x)^m])/e + 6*b^2*g*n^2*x*(a + b*Log[c*(d + e
*x)^n])*Log[h*(i + j*x)^m] - (3*b*d*g*n*(a + b*Log[c*(d + e*x)^n])^2*Log[h*
(i + j*x)^m])/e - 3*b*g*n*x*(a + b*Log[c*(d + e*x)^n])^2*Log[h*(i + j*x)^m]
 + (d*g*(a + b*Log[c*(d + e*x)^n])^3*Log[h*(i + j*x)^m])/e + x*(a + b*Log[c
*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]) + (6*b^3*g*i*m*n^3*PolyLog[2, -
((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*Log[c*(d + e*x)^n
])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*i*m*n^2*(a + b*Lo
g[c*(d + e*x)^n])*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/j - (3*b*d*g*m*
n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i - d*j))])/e
+ (3*b*g*i*m*n*(a + b*Log[c*(d + e*x)^n])^2*PolyLog[2, -((j*(d + e*x))/(e*i
 - d*j))])/j + (6*b^3*d*g*m*n^3*PolyLog[2, (e*(i + j*x))/(e*i - d*j)])/e -
(6*b^3*d*g*m*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3*g*i*m
*n^3*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/j + (6*b^2*d*g*m*n^2*(a + b*
Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))])/e - (6*b^2*g*
i*m*n^2*(a + b*Log[c*(d + e*x)^n])*PolyLog[3, -((j*(d + e*x))/(e*i - d*j))]
)/j - (6*b^3*d*g*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/e + (6*b^3
*g*i*m*n^3*PolyLog[4, -((j*(d + e*x))/(e*i - d*j))])/j
```

Rule 2430

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)), x_Symbol] :> Simp[x*(a + b*Log[c
*(d + e*x)^n])^p*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[g*j*m, Int[(x*(a +
 b*Log[c*(d + e*x)^n])^p)/(i + j*x), x], x] - Dist[b*e*n*p, Int[(x*(a + b*L
og[c*(d + e*x)^n])^(p - 1)*(f + g*Log[h*(i + j*x)^m]))/(d + e*x), x], x]) /
; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && IGtQ[p, 0]
```

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(398+jx)^m\right)\right)\,dx = x(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(398+jx)^m\right)\right)-(gj$$

$$= x(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(398+jx)^m\right)\right)-(gj$$

$$= x(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(398+jx)^m\right)\right)-(gn$$

$$= \frac{398gm(a+b\log(c(d+ex)^n))^3\log\left(\frac{e(398+jx)}{398e-dj}\right)}{j}+x(a+b\,\mathrm{lo}$$

$$= -\frac{gm(d+ex)(a+b\log(c(d+ex)^n))^3}{e}+\frac{398gm(a+b\log}{}$$

$$= -\frac{3bfn(d+ex)(a+b\log(c(d+ex)^n))^2}{e}+\frac{3bgmn(d+ex)}{}$$

$$= 6ab^2fn^2x-6ab^2gmn^2x-\frac{3bfn(d+ex)(a+b\log(c(d+e}{e}$$

$$= 6ab^2fn^2x-6ab^2gmn^2x-6b^3fn^3x+6b^3gmn^3x+\frac{6b^3fn^2}{}$$

$$= 6ab^2fn^2x-6ab^2gmn^2x-6b^3fn^3x+6b^3gmn^3x+\frac{6b^3fn^2}{}$$

$$= 6ab^2fn^2x-6ab^2gmn^2x-6b^3fn^3x+6b^3gmn^3x+\frac{6b^3fn^2}{}$$

$$= 6ab^2fn^2x-12ab^2gmn^2x-6b^3fn^3x+6b^3gmn^3x+\frac{6b^3fn}{}$$

$$= 6ab^2fn^2x-18ab^2gmn^2x-6b^3fn^3x+12b^3gmn^3x+\frac{6b^3f}{}$$

$$= 6ab^2fn^2x-18ab^2gmn^2x-6b^3fn^3x+18b^3gmn^3x+\frac{6b^3f}{}$$

$$= 6ab^2fn^2x-18ab^2gmn^2x-6b^3fn^3x+24b^3gmn^3x+\frac{6b^3f}{}$$

Mathematica [B] time = 1.05337, size = 3163, normalized size = 2.76

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]),x]
```

```
[Out] (-3*a^2*b*d*f*j*n + 3*a^2*b*d*g*j*m*n - 6*a*b^2*d*g*j*m*n^2 + 6*b^3*d*g*j*m
*n^3 + a^3*e*f*j*x - a^3*e*g*j*m*x - 3*a^2*b*e*f*j*n*x + 6*a^2*b*e*g*j*m*n*
x + 6*a*b^2*e*f*j*n^2*x - 18*a*b^2*e*g*j*m*n^2*x - 6*b^3*e*f*j*n^3*x + 24*b
^3*e*g*j*m*n^3*x + 3*a^2*b*d*f*j*n*Log[d + e*x] - 3*a^2*b*d*g*j*m*n*Log[d +
 e*x] + 6*a*b^2*d*g*j*m*n^2*Log[d + e*x] + 6*b^3*d*f*j*n^3*Log[d + e*x] - 1
2*b^3*d*g*j*m*n^3*Log[d + e*x] - 3*a*b^2*d*f*j*n^2*Log[d + e*x]^2 + 3*a*b^2
*d*g*j*m*n^2*Log[d + e*x]^2 - 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2 + b^3*d*f*j*
n^3*Log[d + e*x]^3 - b^3*d*g*j*m*n^3*Log[d + e*x]^3 - 6*a*b^2*d*f*j*n*Log[c
*(d + e*x)^n] + 6*a*b^2*d*g*j*m*n*Log[c*(d + e*x)^n] - 6*b^3*d*g*j*m*n^2*Lo
g[c*(d + e*x)^n] + 3*a^2*b*e*f*j*x*Log[c*(d + e*x)^n] - 3*a^2*b*e*g*j*m*x*L
og[c*(d + e*x)^n] - 6*a*b^2*e*f*j*n*x*Log[c*(d + e*x)^n] + 12*a*b^2*e*g*j*m
*n*x*Log[c*(d + e*x)^n] + 6*b^3*e*f*j*n^2*x*Log[c*(d + e*x)^n] - 18*b^3*e*g
*j*m*n^2*x*Log[c*(d + e*x)^n] + 6*a*b^2*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x
)^n] - 6*a*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n] + 6*b^3*d*g*j*m*n^
2*Log[d + e*x]*Log[c*(d + e*x)^n] - 3*b^3*d*f*j*n^2*Log[d + e*x]^2*Log[c*(d
 + e*x)^n] + 3*b^3*d*g*j*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n] - 3*b^3*d*
f*j*n*Log[c*(d + e*x)^n]^2 + 3*b^3*d*g*j*m*n*Log[c*(d + e*x)^n]^2 + 3*a*b^2
*e*f*j*x*Log[c*(d + e*x)^n]^2 - 3*a*b^2*e*g*j*m*x*Log[c*(d + e*x)^n]^2 - 3*
b^3*e*f*j*n*x*Log[c*(d + e*x)^n]^2 + 6*b^3*e*g*j*m*n*x*Log[c*(d + e*x)^n]^2
 + 3*b^3*d*f*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2 - 3*b^3*d*g*j*m*n*Log[d
+ e*x]*Log[c*(d + e*x)^n]^2 + b^3*e*f*j*x*Log[c*(d + e*x)^n]^3 - b^3*e*g*j*
m*x*Log[c*(d + e*x)^n]^3 + a^3*e*g*i*m*Log[i + j*x] - 3*a^2*b*e*g*i*m*n*Log
[i + j*x] + 3*a^2*b*d*g*j*m*n*Log[i + j*x] + 6*a*b^2*e*g*i*m*n^2*Log[i + j*
x] - 6*b^3*e*g*i*m*n^3*Log[i + j*x] - 3*a^2*b*e*g*i*m*n*Log[d + e*x]*Log[i
+ j*x] + 6*a*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[i + j*x] - 6*a*b^2*d*g*j*m*n^
2*Log[d + e*x]*Log[i + j*x] - 6*b^3*e*g*i*m*n^3*Log[d + e*x]*Log[i + j*x] +
 3*a*b^2*e*g*i*m*n^2*Log[d + e*x]^2*Log[i + j*x] - 3*b^3*e*g*i*m*n^3*Log[d
+ e*x]^2*Log[i + j*x] + 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2*Log[i + j*x] - b^3
*e*g*i*m*n^3*Log[d + e*x]^3*Log[i + j*x] + 3*a^2*b*e*g*i*m*Log[c*(d + e*x)^
n]*Log[i + j*x] - 6*a*b^2*e*g*i*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 6*a*b
^2*d*g*j*m*n*Log[c*(d + e*x)^n]*Log[i + j*x] + 6*b^3*e*g*i*m*n^2*Log[c*(d +
 e*x)^n]*Log[i + j*x] - 6*a*b^2*e*g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*L
og[i + j*x] + 6*b^3*e*g*i*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x
] - 6*b^3*d*g*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[i + j*x] + 3*b^3*
e*g*i*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[i + j*x] + 3*a*b^2*e*g*i*
m*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 3*b^3*e*g*i*m*n*Log[c*(d + e*x)^n]^2*
Log[i + j*x] + 3*b^3*d*g*j*m*n*Log[c*(d + e*x)^n]^2*Log[i + j*x] - 3*b^3*e*
g*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[i + j*x] + b^3*e*g*i*m*Log[c*
(d + e*x)^n]^3*Log[i + j*x] + 3*a^2*b*e*g*i*m*n*Log[d + e*x]*Log[(e*(i + j*
x))/(e*i - d*j)] - 3*a^2*b*d*g*j*m*n*Log[d + e*x]*Log[(e*(i + j*x))/(e*i -
d*j)] - 6*a*b^2*e*g*i*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 6
*a*b^2*d*g*j*m*n^2*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] + 6*b^3*e*g*
i*m*n^3*Log[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 6*b^3*d*g*j*m*n^3*Log
[d + e*x]*Log[(e*(i + j*x))/(e*i - d*j)] - 3*a*b^2*e*g*i*m*n^2*Log[d + e*x]
^2*Log[(e*(i + j*x))/(e*i - d*j)] + 3*a*b^2*d*g*j*m*n^2*Log[d + e*x]^2*Log[
(e*(i + j*x))/(e*i - d*j)] + 3*b^3*e*g*i*m*n^3*Log[d + e*x]^2*Log[(e*(i + j
*x))/(e*i - d*j)] - 3*b^3*d*g*j*m*n^3*Log[d + e*x]^2*Log[(e*(i + j*x))/(e*i
 - d*j)] + b^3*e*g*i*m*n^3*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] -
b^3*d*g*j*m*n^3*Log[d + e*x]^3*Log[(e*(i + j*x))/(e*i - d*j)] + 6*a*b^2*e*g
*i*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] - 6*a
*b^2*d*g*j*m*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j
```

```
)] - 6*b^3*e*g*i*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i + j*x))/(e
*i - d*j)] + 6*b^3*d*g*j*m*n^2*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[(e*(i +
j*x))/(e*i - d*j)] - 3*b^3*e*g*i*m*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Lo
g[(e*(i + j*x))/(e*i - d*j)] + 3*b^3*d*g*j*m*n^2*Log[d + e*x]^2*Log[c*(d +
e*x)^n]*Log[(e*(i + j*x))/(e*i - d*j)] + 3*b^3*e*g*i*m*n*Log[d + e*x]*Log[c
*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 3*b^3*d*g*j*m*n*Log[d + e*
x]*Log[c*(d + e*x)^n]^2*Log[(e*(i + j*x))/(e*i - d*j)] - 3*a^2*b*d*g*j*n*Lo
g[h*(i + j*x)^m] + a^3*e*g*j*x*Log[h*(i + j*x)^m] - 3*a^2*b*e*g*j*n*x*Log[h
*(i + j*x)^m] + 6*a*b^2*e*g*j*n^2*x*Log[h*(i + j*x)^m] - 6*b^3*e*g*j*n^3*x*
Log[h*(i + j*x)^m] + 3*a^2*b*d*g*j*n*Log[d + e*x]*Log[h*(i + j*x)^m] + 6*b^
3*d*g*j*n^3*Log[d + e*x]*Log[h*(i + j*x)^m] - 3*a*b^2*d*g*j*n^2*Log[d + e*x
]^2*Log[h*(i + j*x)^m] + b^3*d*g*j*n^3*Log[d + e*x]^3*Log[h*(i + j*x)^m] -
6*a*b^2*d*g*j*n*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] + 3*a^2*b*e*g*j*x*Log
[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 6*a*b^2*e*g*j*n*x*Log[c*(d + e*x)^n]*L
og[h*(i + j*x)^m] + 6*b^3*e*g*j*n^2*x*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m]
 + 6*a*b^2*d*g*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 3*b
^3*d*g*j*n^2*Log[d + e*x]^2*Log[c*(d + e*x)^n]*Log[h*(i + j*x)^m] - 3*b^3*d
*g*j*n*Log[c*(d + e*x)^n]^2*Log[h*(i + j*x)^m] + 3*a*b^2*e*g*j*x*Log[c*(d +
 e*x)^n]^2*Log[h*(i + j*x)^m] - 3*b^3*e*g*j*n*x*Log[c*(d + e*x)^n]^2*Log[h*
(i + j*x)^m] + 3*b^3*d*g*j*n*Log[d + e*x]*Log[c*(d + e*x)^n]^2*Log[h*(i + j
*x)^m] + b^3*e*g*j*x*Log[c*(d + e*x)^n]^3*Log[h*(i + j*x)^m] + 3*b*g*(e*i -
 d*j)*m*n*(a^2 - 2*a*b*n + 2*b^2*n^2 + 2*b*(a - b*n)*Log[c*(d + e*x)^n] + b
^2*Log[c*(d + e*x)^n]^2)*PolyLog[2, (j*(d + e*x))/(-(e*i) + d*j)] - 6*b^2*g
*(e*i - d*j)*m*n^2*(a - b*n + b*Log[c*(d + e*x)^n])*PolyLog[3, (j*(d + e*x)
)/(-(e*i) + d*j)] + 6*b^3*e*g*i*m*n^3*PolyLog[4, (j*(d + e*x))/(-(e*i) + d*
j)] - 6*b^3*d*g*j*m*n^3*PolyLog[4, (j*(d + e*x))/(-(e*i) + d*j)])/(e*j)
```

Maple [F] time = 4.523, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^{3}\left(f+g\ln\left(h\left(jx+i\right)^{m}\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="max
ima")
```

```
[Out] b^3*f*x*log((e*x + d)^n*c)^3 - 3*a^2*b*e*f*n*(x/e - d*log(e*x + d)/e^2) - a
^3*g*j*m*(x/j - i*log(j*x + i)/j^2) + 3*a*b^2*f*x*log((e*x + d)^n*c)^2 + 3*
a^2*b*f*x*log((e*x + d)^n*c) + a^3*g*x*log((j*x + i)^m*h) - 3*(2*e*n*(x/e -
 d*log(e*x + d)/e^2)*log((e*x + d)^n*c) + (d*log(e*x + d)^2 - 2*e*x + 2*d*l
og(e*x + d))*n^2/e)*a*b^2*f - (3*e*n*(x/e - d*log(e*x + d)/e^2)*log((e*x +
d)^n*c)^2 - e*n*((d*log(e*x + d)^3 + 3*d*log(e*x + d)^2 - 6*e*x + 6*d*log(e
*x + d))*n^2/e^2 - 3*(d*log(e*x + d)^2 - 2*e*x + 2*d*log(e*x + d))*n*log((e
*x + d)^n*c)/e^2))*b^3*f + a^3*f*x + ((b^3*e*g*i*m*log(j*x + i) - (j*m - j*
```

```
log(h))*b^3*e*g*x)*log((e*x + d)^n)^3 + (b^3*d*g*j*n^3*log(e*x + d)^3 + b^3
*e*g*j*x*log((e*x + d)^n)^3 - 3*(a*b^2*d*g*j*n^2 - (d*g*j*n^3 - d*g*j*n^2*l
og(c))*b^3)*log(e*x + d)^2 + 3*(b^3*d*g*j*n*log(e*x + d) + (a*b^2*e*g*j - (
e*g*j*n - e*g*j*log(c))*b^3)*x)*log((e*x + d)^n)^2 - (3*(e*g*j*n - e*g*j*lo
g(c))*a^2*b - 3*(2*e*g*j*n^2 - 2*e*g*j*n*log(c) + e*g*j*log(c)^2)*a*b^2 + (
6*e*g*j*n^3 - 6*e*g*j*n^2*log(c) + 3*e*g*j*n*log(c)^2 - e*g*j*log(c)^3)*b^3
)*x + 3*(a^2*b*d*g*j*n - 2*(d*g*j*n^2 - d*g*j*n*log(c))*a*b^2 + (2*d*g*j*n^
3 - 2*d*g*j*n^2*log(c) + d*g*j*n*log(c)^2)*b^3)*log(e*x + d) - 3*(b^3*d*g*j
*n^2*log(e*x + d)^2 - (a^2*b*e*g*j - 2*(e*g*j*n - e*g*j*log(c))*a*b^2 + (2*
e*g*j*n^2 - 2*e*g*j*n*log(c) + e*g*j*log(c)^2)*b^3)*x - 2*(a*b^2*d*g*j*n -
(d*g*j*n^2 - d*g*j*n*log(c))*b^3)*log(e*x + d))*log((e*x + d)^n))*log((j*x
+ i)^m))/(e*j) - integrate(-(b^3*d*e*g*i*j*log(c)^3*log(h) + 3*a*b^2*d*e*g*
i*j*log(c)^2*log(h) + 3*a^2*b*d*e*g*i*j*log(c)*log(h) - (b^3*d*e*g*j^2*m*n^
3*x + b^3*d^2*g*j^2*m*n^3)*log(e*x + d)^3 + (3*(e^2*g*j^2*m*n - (j^2*m - j^
2*log(h))*e^2*g*log(c))*a^2*b - 3*(2*e^2*g*j^2*m*n^2 - 2*e^2*g*j^2*m*n*log(
c) + (j^2*m - j^2*log(h))*e^2*g*log(c)^2)*a*b^2 + (6*e^2*g*j^2*m*n^3 - 6*e^
2*g*j^2*m*n^2*log(c) + 3*e^2*g*j^2*m*n*log(c)^2 - (j^2*m - j^2*log(h))*e^2*
g*log(c)^3)*b^3)*x^2 + 3*(a*b^2*d^2*g*j^2*m*n^2 - (d^2*g*j^2*m*n^3 - d^2*g*
j^2*m*n^2*log(c))*b^3 + (a*b^2*d*e*g*j^2*m*n^2 - (d*e*g*j^2*m*n^3 - d*e*g*j
^2*m*n^2*log(c))*b^3)*x)*log(e*x + d)^2 + 3*(b^3*d*e*g*i*j*log(c)*log(h) +
a*b^2*d*e*g*i*j*log(h) - ((j^2*m - j^2*log(h))*a*b^2*e^2*g + ((j^2*m - j^2*
log(h))*e^2*g*log(c) - (2*j^2*m*n - j^2*n*log(h))*e^2*g)*b^3)*x^2 + ((e^2*g
*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*a*b^2 + (d*e*g*j^2*m*n + (i*j*m*n
 - i*j*n*log(h))*e^2*g + (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*lo
g(c))*b^3)*x - (b^3*d*e*g*j^2*m*n*x + b^3*d^2*g*j^2*m*n)*log(e*x + d) - (b^
3*e^2*g*i*j*m*n*x + b^3*e^2*g*i^2*m*n)*log(j*x + i))*log((e*x + d)^n)^2 + (
3*(d*e*g*j^2*m*n + (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c))*
a^2*b - 3*(2*d*e*g*j^2*m*n^2 - 2*d*e*g*j^2*m*n*log(c) - (e^2*g*i*j*log(h) -
 (j^2*m - j^2*log(h))*d*e*g)*log(c)^2)*a*b^2 + (6*d*e*g*j^2*m*n^3 - 6*d*e*g
*j^2*m*n^2*log(c) + 3*d*e*g*j^2*m*n*log(c)^2 + (e^2*g*i*j*log(h) - (j^2*m -
 j^2*log(h))*d*e*g)*log(c)^3)*b^3)*x - 3*(a^2*b*d^2*g*j^2*m*n - 2*(d^2*g*j^
2*m*n^2 - d^2*g*j^2*m*n*log(c))*a*b^2 + (2*d^2*g*j^2*m*n^3 - 2*d^2*g*j^2*m*
n^2*log(c) + d^2*g*j^2*m*n*log(c)^2)*b^3 + (a^2*b*d*e*g*j^2*m*n - 2*(d*e*g*
j^2*m*n^2 - d*e*g*j^2*m*n*log(c))*a*b^2 + (2*d*e*g*j^2*m*n^3 - 2*d*e*g*j^2*
m*n^2*log(c) + d*e*g*j^2*m*n*log(c)^2)*b^3)*x)*log(e*x + d) + 3*(b^3*d*e*g*
i*j*log(c)^2*log(h) + 2*a*b^2*d*e*g*i*j*log(c)*log(h) + a^2*b*d*e*g*i*j*log
(h) - ((j^2*m - j^2*log(h))*a^2*b*e^2*g - 2*(e^2*g*j^2*m*n - (j^2*m - j^2*l
og(h))*e^2*g*log(c))*a*b^2 + (2*e^2*g*j^2*m*n^2 - 2*e^2*g*j^2*m*n*log(c) +
(j^2*m - j^2*log(h))*e^2*g*log(c)^2)*b^3)*x^2 + (b^3*d*e*g*j^2*m*n^2*x + b^
3*d^2*g*j^2*m*n^2)*log(e*x + d)^2 + ((e^2*g*i*j*log(h) - (j^2*m - j^2*log(h
))*d*e*g)*a^2*b + 2*(d*e*g*j^2*m*n + (e^2*g*i*j*log(h) - (j^2*m - j^2*log(h
))*d*e*g)*log(c))*a*b^2 - (2*d*e*g*j^2*m*n^2 - 2*d*e*g*j^2*m*n*log(c) - (e^
2*g*i*j*log(h) - (j^2*m - j^2*log(h))*d*e*g)*log(c)^2)*b^3)*x - 2*(a*b^2*d^
2*g*j^2*m*n - (d^2*g*j^2*m*n^2 - d^2*g*j^2*m*n*log(c))*b^3 + (a*b^2*d*e*g*j
^2*m*n - (d*e*g*j^2*m*n^2 - d*e*g*j^2*m*n*log(c))*b^3)*x)*log(e*x + d))*log
((e*x + d)^n))/(e^2*j^2*x^2 + d*e*i*j + (e^2*i*j + d*e*j^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(b^3 f \log\left((ex+d)^n c\right)^3 + 3\,ab^2 f \log\left((ex+d)^n c\right)^2 + 3\,a^2 b f \log\left((ex+d)^n c\right) + a^3 f + \left(b^3 g \log\left((ex+d)^n c\right)^3 + 3\,ab^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="fri
cas")
```

```
[Out] integral(b^3*f*log((e*x + d)^n*c)^3 + 3*a*b^2*f*log((e*x + d)^n*c)^2 + 3*a^
```

```
2*b*f*log((e*x + d)^n*c) + a^3*f + (b^3*g*log((e*x + d)^n*c)^3 + 3*a*b^2*g*
log((e*x + d)^n*c)^2 + 3*a^2*b*g*log((e*x + d)^n*c) + a^3*g)*log((j*x + i)^
m*h), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left((ex+d)^n c\right)+a\right)^3 \left(g\log\left((jx+i)^m h\right)+f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m)),x, algorithm="gia
c")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f), x)
```

3.399 $\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$

Optimal. Leaf size=36

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x},x\right)$$

```
[Out] Unintegrable[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x
]
```

Rubi [A] time = 0.0396653, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(399+jx)^m\right)\right)}{x}\,dx=\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(399+jx)^m\right)\right)}{x}\,dx$$

Mathematica [A] time = 1.26977, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x,x]
```

```
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x, x]
```

Maple [A] time = 1.802, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^n\right)\right)^3\left(f+g\ln\left(h\left(jx+i\right)^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$a^3 f \log(x) + \int \frac{(g\log(h)+f)b^3\log\left((ex+d)^n\right)^3 + (g\log(h)+f)b^3\log(c)^3 + 3\,(g\log(h)+f)ab^2\log(c)^2 + 3\,(g\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="m
axima")
```

```
[Out] a^3*f*log(x) + integrate(((g*log(h) + f)*b^3*log((e*x + d)^n)^3 + (g*log(h)
 + f)*b^3*log(c)^3 + 3*(g*log(h) + f)*a*b^2*log(c)^2 + 3*(g*log(h) + f)*a^2
*b*log(c) + a^3*g*log(h) + 3*((g*log(h) + f)*b^3*log(c) + (g*log(h) + f)*a*
b^2)*log((e*x + d)^n)^2 + 3*((g*log(h) + f)*b^3*log(c)^2 + 2*(g*log(h) + f)
*a*b^2*log(c) + (g*log(h) + f)*a^2*b)*log((e*x + d)^n) + (b^3*g*log((e*x +
d)^n)^3 + b^3*g*log(c)^3 + 3*a*b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g +
3*(b^3*g*log(c) + a*b^2*g)*log((e*x + d)^n)^2 + 3*(b^3*g*log(c)^2 + 2*a*b^2
*g*log(c) + a^2*b*g)*log((e*x + d)^n))*log((j*x + i)^m))/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3 f\log\left((ex+d)^n c\right)^3 + 3\,ab^2 f\log\left((ex+d)^n c\right)^2 + 3\,a^2 bf\log\left((ex+d)^n c\right) + a^3 f + \left(b^3 g\log\left((ex+d)^n c\right)^3 + 3\right.}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="f
ricas")
```

```
[Out] integral((b^3*f*log((e*x + d)^n*c)^3 + 3*a*b^2*f*log((e*x + d)^n*c)^2 + 3*a
^2*b*f*log((e*x + d)^n*c) + a^3*f + (b^3*g*log((e*x + d)^n*c)^3 + 3*a*b^2*g
*log((e*x + d)^n*c)^2 + 3*a^2*b*g*log((e*x + d)^n*c) + a^3*g)*log((j*x + i)
^m*h))/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m))/x,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3 \left(g\log\left(\left(jx+i\right)^m h\right)+f\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x,x, algorithm="g
iac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f)/x, x)
```

3.400 $\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$

Optimal. Leaf size=36

$$\text{Unintegrable}\left(\frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2},x\right)$$

```
[Out] Unintegrable[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,
 x]
```

Rubi [A] time = 0.0411003, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Defer[Int][((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2, x
]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(400+jx)^m\right)\right)}{x^2}\,dx=\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(400+jx)^m\right)\right)}{x^2}\,dx$$

Mathematica [A] time = 1.76922, size = 0, normalized size = 0.

$$\int \frac{(a+b\log(c(d+ex)^n))^3\left(f+g\log\left(h(i+jx)^m\right)\right)}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2,x]
```

```
[Out] Integrate[((a + b*Log[c*(d + e*x)^n])^3*(f + g*Log[h*(i + j*x)^m]))/x^2, x]
```

Maple [A] time = 2.023, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(ex+d\right)^{n}\right)\right)^3\left(f+g\ln\left(h\left(jx+i\right)^{m}\right)\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))^3*(f+g*ln(h*(j*x+i)^m))/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-3\,a^2 befn\left(\frac{\log(ex+d)}{d}-\frac{\log(x)}{d}\right)-\frac{3\,a^2 bf\log\left((ex+d)^n c\right)}{x}-\frac{a^3 f}{x}+\int\frac{\left(g\log(h)+f\right)b^3\log\left((ex+d)^n\right)^3+\left(g\log(h)+\ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"maxima")
```

```
[Out] -3*a^2*b*e*f*n*(log(e*x + d)/d - log(x)/d) - 3*a^2*b*f*log((e*x + d)^n*c)/x
 - a^3*f/x + integrate(((g*log(h) + f)*b^3*log((e*x + d)^n)^3 + (g*log(h) +
 f)*b^3*log(c)^3 + 3*(g*log(h) + f)*a*b^2*log(c)^2 + 3*a^2*b*g*log(c)*log(h
) + a^3*g*log(h) + 3*((g*log(h) + f)*b^3*log(c) + (g*log(h) + f)*a*b^2)*log
((e*x + d)^n)^2 + 3*((g*log(h) + f)*b^3*log(c)^2 + 2*(g*log(h) + f)*a*b^2*l
og(c) + a^2*b*g*log(h))*log((e*x + d)^n) + (b^3*g*log((e*x + d)^n)^3 + b^3*
g*log(c)^3 + 3*a*b^2*g*log(c)^2 + 3*a^2*b*g*log(c) + a^3*g + 3*(b^3*g*log(c
) + a*b^2*g)*log((e*x + d)^n)^2 + 3*(b^3*g*log(c)^2 + 2*a*b^2*g*log(c) + a^
2*b*g)*log((e*x + d)^n))*log((j*x + i)^m))/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3 f\log\left((ex+d)^n c\right)^3+3\,ab^2 f\log\left((ex+d)^n c\right)^2+3\,a^2 bf\log\left((ex+d)^n c\right)+a^3 f+\left(b^3 g\log\left((ex+d)^n c\right)^3+3\,ab\ldots\right.}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"fricas")
```

```
[Out] integral((b^3*f*log((e*x + d)^n*c)^3 + 3*a*b^2*f*log((e*x + d)^n*c)^2 + 3*a
^2*b*f*log((e*x + d)^n*c) + a^3*f + (b^3*g*log((e*x + d)^n*c)^3 + 3*a*b^2*g
*log((e*x + d)^n*c)^2 + 3*a^2*b*g*log((e*x + d)^n*c) + a^3*g)*log((j*x + i)
^m*h))/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))**3*(f+g*ln(h*(j*x+i)**m))/x**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)^3\left(g\log\left(\left(jx+i\right)^m h\right)+f\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))^3*(f+g*log(h*(j*x+i)^m))/x^2,x, algorithm=
"giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)^3*(g*log((j*x + i)^m*h) + f)/x^2, x)
```

3.401 $\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx$

Optimal. Leaf size=66

$$\frac{bn\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{e}-\frac{\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{e}$$

```
[Out] -(((a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/e)
+ (b*n*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/e
```

Rubi [A] time = 0.083694, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.075, Rules used = {2433, 2374, 6589}

$$\frac{bn\text{PolyLog}\left(3,-\frac{g(d+ex)}{ef-dg}\right)}{e}-\frac{\text{PolyLog}\left(2,-\frac{g(d+ex)}{ef-dg}\right)(a+b\log(c(d+ex)^n))}{e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(d + e*x),x
]
```

```
[Out] -(((a + b*Log[c*(d + e*x)^n])*PolyLog[2, -((g*(d + e*x))/(e*f - d*g))])/e)
+ (b*n*PolyLog[3, -((g*(d + e*x))/(e*f - d*g))])/e
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)^n))\log\left(\frac{e(f+gx)}{ef-dg}\right)}{d+ex}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\log(cx^n))\log\left(\frac{e\left(\frac{ef-dg}{e}+\frac{gx}{e}\right)}{ef-dg}\right)}{x}dx, x, d+ex\right)}{e}$$

$$= -\frac{(a+b\log(c(d+ex)^n))\operatorname{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e} + \frac{(bn)\,\text{Subst}\left(\int \frac{\operatorname{Li}_2\left(-\frac{gx}{ef-dg}\right)}{x}dx, x,\right.}{e}$$

$$= -\frac{(a+b\log(c(d+ex)^n))\operatorname{Li}_2\left(-\frac{g(d+ex)}{ef-dg}\right)}{e} + \frac{bn\operatorname{Li}_3\left(-\frac{g(d+ex)}{ef-dg}\right)}{e}$$

Mathematica [A] time = 0.103574, size = 62, normalized size = 0.94

$$\frac{bn\text{PolyLog}\left(3,\frac{g(d+ex)}{dg-ef}\right)-\text{PolyLog}\left(2,\frac{g(d+ex)}{dg-ef}\right)(a+b\log(c(d+ex)^n))}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)^n])*Log[(e*(f + g*x))/(e*f - d*g)])/(d +
e*x),x]
```

```
[Out] (-((a + b*Log[c*(d + e*x)^n])*PolyLog[2, (g*(d + e*x))/(-(e*f) + d*g)]) + b
*n*PolyLog[3, (g*(d + e*x))/(-(e*f) + d*g)])/e
```

Maple [F] time = 2.107, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c(ex+d)^n\right)}{ex+d}\ln\left(\frac{(gx+f)e}{-dg+fe}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

```
[Out] int((a+b*ln(c*(e*x+d)^n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(\frac{(gx+f)e}{ef-dg}\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="maxima")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log((g*x + f)*e/(e*f - d*g))/(e*x + d)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left((ex+d)^n c\right)\log\left(\frac{egx+ef}{ef-dg}\right)+a\log\left(\frac{egx+ef}{ef-dg}\right)}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="fricas")
```

```
[Out] integral((b*log((e*x + d)^n*c)*log((e*g*x + e*f)/(e*f - d*g)) + a*log((e*g*
x + e*f)/(e*f - d*g)))/(e*x + d), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)**n))*ln(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left((ex+d)^n c\right)+a\right)\log\left(\frac{(gx+f)e}{ef-dg}\right)}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)^n))*log(e*(g*x+f)/(-d*g+e*f))/(e*x+d),x, algor
ithm="giac")
```

```
[Out] integrate((b*log((e*x + d)^n*c) + a)*log((g*x + f)*e/(e*f - d*g))/(e*x + d)
, x)
```

3.402 $\int \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{(d+ex)^2}\,dx$

Optimal. Leaf size=92

$$-\frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)}-\frac{a+b\log(c(d+ex))+b}{e(d+ex)}-\frac{b\log(c(d+ex))}{e(d+ex)}-\frac{b}{e(d+ex)}$$

```
[Out] -(b/(e*(d + e*x))) - (b*Log[c*(d + e*x)])/(e*(d + e*x)) - (Log[c*(d + e*x)]
*(a + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (a + b + b*Log[c*(d + e*x)])/(e*
(d + e*x))
```

Rubi [A] time = 0.0945195, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2369, 12, 2304, 2366}

$$-\frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)}-\frac{a+b\log(c(d+ex))+b}{e(d+ex)}-\frac{b\log(c(d+ex))}{e(d+ex)}-\frac{b}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[(Log[c*(d + e*x)]*(a + b*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -(b/(e*(d + e*x))) - (b*Log[c*(d + e*x)])/(e*(d + e*x)) - (Log[c*(d + e*x)]
*(a + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (a + b + b*Log[c*(d + e*x)])/(e*
(d + e*x))
```

Rule 2369

```
Int[((a_.) + Log[v_]*(b_.))^(p_.)*((c_.) + Log[v_]*(d_.))^(q_.)*(u_)^(m_.),
 x_Symbol] :> With[{e = Coeff[u, x, 0], f = Coeff[u, x, 1], g = Coeff[v, x,
 0], h = Coeff[v, x, 1]}, Dist[1/h, Subst[Int[((f*x)/h)^m*(a + b*Log[x])^p*
(c + d*Log[x])^q, x], x, v], x] /; EqQ[f*g - e*h, 0] && NeQ[g, 0]] /; FreeQ
[{a, b, c, d, m, p, q}, x] && LinearQ[{u, v}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2366

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.) + Log[(f_.)*(x_)^(r_
.)]*(e_.))*((g_.)*(x_))^(m_.), x_Symbol] :> With[{u = IntHide[(g*x)^m*(a +
b*Log[c*x^n])^p, x]}, Dist[d + e*Log[f*x^r], u, x] - Dist[e*r, Int[Simplify
Integrand[u/x, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, r}, x] &
&  !(EqQ[p, 1] && EqQ[a, 0] && NeQ[d, 0])
```

Rubi steps

$$\int \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{(d+ex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{c^2\log(x)(a+b\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{ce}$$
$$= \frac{c\,\text{Subst}\left(\int \frac{\log(x)(a+b\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{e}$$
$$= -\frac{b\log(c(d+ex))}{e(d+ex)} - \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)} - \frac{c\,\text{Subst}\left(\int \frac{-a\left(1+\frac{b}{a}\right.}{}\right.}{}$$
$$= -\frac{b}{e(d+ex)} - \frac{b\log(c(d+ex))}{e(d+ex)} - \frac{\log(c(d+ex))(a+b\log(c(d+ex)))}{e(d+ex)} - \frac{a+b}{}$$

Mathematica [A] time = 0.0650981, size = 43, normalized size = 0.47

$$-\frac{(a+2b)\log(c(d+ex))+a+b\log^2(c(d+ex))+2b}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Log[c*(d + e*x)]*(a + b*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -((a + 2*b + (a + 2*b)*Log[c*(d + e*x)] + b*Log[c*(d + e*x)]^2)/(e*(d + e*x
)))
```

Maple [A] time = 0.06, size = 116, normalized size = 1.3

$$-\frac{ac\ln(cex+cd)}{e(cex+cd)} - \frac{ac}{e(cex+cd)} - \frac{bc(\ln(cex+cd))^2}{e(cex+cd)} - 2\frac{bc\ln(cex+cd)}{e(cex+cd)} - 2\frac{bc}{e(cex+cd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/(e*x+d)^2,x)
```

```
[Out] -c/e*a*ln(c*e*x+c*d)/(c*e*x+c*d)-c/e*a/(c*e*x+c*d)-c/e*b/(c*e*x+c*d)*ln(c*e
*x+c*d)^2-2*c/e*b*ln(c*e*x+c*d)/(c*e*x+c*d)-2*c/e*b/(c*e*x+c*d)
```

Maxima [A] time = 1.03457, size = 134, normalized size = 1.46

$$-\left(b\left(\frac{ce}{ce^3x+cde^2} + \frac{\log(cex+cd)}{e^2x+de}\right) + \frac{a}{e^2x+de}\right)\log((ex+d)c) - \frac{(b(\log(c)+2)+b\log(ex+d)+a)e}{e^3x+de^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] -(b*(c*e/(c*e^3*x + c*d*e^2) + log(c*e*x + c*d)/(e^2*x + d*e)) + a/(e^2*x +
 d*e))*log((e*x + d)*c) - (b*(log(c) + 2) + b*log(e*x + d) + a)*e/(e^3*x +
d*e^2)
```

Fricas [A] time = 2.32849, size = 105, normalized size = 1.14

$$-\frac{b\log\left(cex+cd\right)^{2}+\left(a+2\,b\right)\log\left(cex+cd\right)+a+2\,b}{e^{2}x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] -(b*log(c*e*x + c*d)^2 + (a + 2*b)*log(c*e*x + c*d) + a + 2*b)/(e^2*x + d*e
)
```

Sympy [A] time = 0.421965, size = 56, normalized size = 0.61

$$-\frac{b\log\left(c\left(d+ex\right)\right)^{2}}{de+e^{2}x}+\frac{\left(-a-2b\right)\log\left(c\left(d+ex\right)\right)}{de+e^{2}x}-\frac{a+2b}{de+e^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(e*x+d))*(a+b*ln(c*(e*x+d)))/(e*x+d)**2,x)
```

```
[Out] -b*log(c*(d + e*x))**2/(d*e + e**2*x) + (-a - 2*b)*log(c*(d + e*x))/(d*e +
e**2*x) - (a + 2*b)/(d*e + e**2*x)
```

Giac [A] time = 1.23726, size = 86, normalized size = 0.93

$$-\frac{be^{(-1)}\log\left((xe+d)ce\right)^{2}}{xe+d}-\frac{ae^{(-1)}\log\left((xe+d)ce\right)}{xe+d}-\frac{be^{(-1)}}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(e*x+d))*(a+b*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -b*e^(-1)*log((x*e + d)*c*e)^2/(x*e + d) - a*e^(-1)*log((x*e + d)*c*e)/(x*e
 + d) - b*e^(-1)/(x*e + d)
```

3.403 $\int \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{(d+ex)^2}\,dx$

Optimal. Leaf size=102

$$-\frac{(a+b\log(c(d+ex)))(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{g(a+b\log(c(d+ex))+b)}{e(d+ex)}-\frac{b(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{bg}{e(d+ex)}$$

```
[Out] -((b*g)/(e*(d + e*x))) - (g*(a + b + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (
b*(f + g*Log[c*(d + e*x)]))/(e*(d + e*x)) - ((a + b*Log[c*(d + e*x)])*(f +
g*Log[c*(d + e*x)]))/(e*(d + e*x))
```

Rubi [A] time = 0.110858, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2369, 12, 2304, 2366}

$$-\frac{(a+b\log(c(d+ex)))(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{g(a+b\log(c(d+ex))+b)}{e(d+ex)}-\frac{b(g\log(c(d+ex))+f)}{e(d+ex)}-\frac{bg}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Log[c*(d + e*x)])*(f + g*Log[c*(d + e*x)]))/(d + e*x)^2,x]
```

```
[Out] -((b*g)/(e*(d + e*x))) - (g*(a + b + b*Log[c*(d + e*x)]))/(e*(d + e*x)) - (
b*(f + g*Log[c*(d + e*x)]))/(e*(d + e*x)) - ((a + b*Log[c*(d + e*x)])*(f +
g*Log[c*(d + e*x)]))/(e*(d + e*x))
```

Rule 2369

```
Int[((a_.) + Log[v_]*(b_.))^(p_.)*((c_.) + Log[v_]*(d_.))^(q_.)*(u_)^(m_.),
 x_Symbol] :> With[{e = Coeff[u, x, 0], f = Coeff[u, x, 1], g = Coeff[v, x,
 0], h = Coeff[v, x, 1]}, Dist[1/h, Subst[Int[((f*x)/h)^m*(a + b*Log[x])^p*
(c + d*Log[x])^q, x], x, v], x] /; EqQ[f*g - e*h, 0] && NeQ[g, 0]] /; FreeQ
[{a, b, c, d, m, p, q}, x] && LinearQ[{u, v}, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2366

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.) + Log[(f_.)*(x_)^(r_
.)]*(e_.))*((g_.)*(x_))^(m_.), x_Symbol] :> With[{u = IntHide[(g*x)^m*(a +
b*Log[c*x^n])^p, x]}, Dist[d + e*Log[f*x^r], u, x] - Dist[e*r, Int[Simplify
Integrand[u/x, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, m, n, p, r}, x] &
&  !(EqQ[p, 1] && EqQ[a, 0] && NeQ[d, 0])
```

Rubi steps

$$\int \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+ex)))}{(d+ex)^2}\,dx = \frac{\text{Subst}\left(\int \frac{c^2(a+b\log(x))(f+g\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{ce}$$

$$= \frac{c\,\text{Subst}\left(\int \frac{(a+b\log(x))(f+g\log(x))}{x^2}\,dx, x, c(d+ex)\right)}{e}$$

$$= -\frac{b(f+g\log(c(d+ex)))}{e(d+ex)} - \frac{(a+b\log(c(d+ex)))(f+g\log(c(d+e$$

$$= -\frac{bg}{e(d+ex)} - \frac{g(a+b+b\log(c(d+ex)))}{e(d+ex)} - \frac{b(f+g\log(c(d+ex)))}{e(d+ex)}$$

Mathematica [A] time = 0.103999, size = 58, normalized size = 0.57

$$-\frac{(ag+b(f+2g))\log(c(d+ex))+a(f+g)+bg\log^2(c(d+ex))+b(f+2g)}{e(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Log[c*(d + e*x)])*(f + g*Log[c*(d + e*x)]))/(d + e*x)^2,x
]
```

```
[Out] -((a*(f + g) + b*(f + 2*g) + (a*g + b*(f + 2*g))*Log[c*(d + e*x)] + b*g*Log
[c*(d + e*x)]^2)/(e*(d + e*x)))
```

Maple [A] time = 0.065, size = 184, normalized size = 1.8

$$-\frac{acf}{e(cex+cd)} - \frac{acg\ln(cex+cd)}{e(cex+cd)} - \frac{acg}{e(cex+cd)} - \frac{bcf\ln(cex+cd)}{e(cex+cd)} - \frac{bcf}{e(cex+cd)} - \frac{bcg(\ln(cex+cd))^2}{e(cex+cd)} - 2\frac{bcg\ln(ce}{e(cex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/(e*x+d)^2,x)
```

```
[Out] -c/e*a*f/(c*e*x+c*d)-c/e*a*g*ln(c*e*x+c*d)/(c*e*x+c*d)-c/e*a*g/(c*e*x+c*d)-
c/e*b*f*ln(c*e*x+c*d)/(c*e*x+c*d)-c/e*b*f/(c*e*x+c*d)-c/e*b*g/(c*e*x+c*d)*l
n(c*e*x+c*d)^2-2*c/e*b*g*ln(c*e*x+c*d)/(c*e*x+c*d)-2*c/e*b*g/(c*e*x+c*d)
```

Maxima [A] time = 1.08332, size = 215, normalized size = 2.11

$$-b\left(\frac{ce}{ce^3x+cde^2}+\frac{\log(cex+cd)}{e^2x+de}\right)f - a\left(\frac{ce}{ce^3x+cde^2}+\frac{\log(cex+cd)}{e^2x+de}\right)g - \frac{af}{e^2x+de} - \frac{\left(c^2\log(cex+cd)^2+2c^2\log(ce\right.}{(cex+cd)ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"maxima")
```

```
[Out] -b*(c*e/(c*e^3*x + c*d*e^2) + log(c*e*x + c*d)/(e^2*x + d*e))*f - a*(c*e/(c
*e^3*x + c*d*e^2) + log(c*e*x + c*d)/(e^2*x + d*e))*g - a*f/(e^2*x + d*e) -
```

```
(c^2*log(c*e*x + c*d)^2 + 2*c^2*log(c*e*x + c*d) + 2*c^2)*b*g/((c*e*x + c*
d)*c*e)
```

Fricas [A] time = 2.29366, size = 143, normalized size = 1.4

$$-\frac{bg\log\left(cex+cd\right)^{2}+(a+b)f+(a+2\,b)g+\left(bf+(a+2\,b)g\right)\log\left(cex+cd\right)}{e^{2}x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"fricas")
```

```
[Out] -(b*g*log(c*e*x + c*d)^2 + (a + b)*f + (a + 2*b)*g + (b*f + (a + 2*b)*g)*lo
g(c*e*x + c*d))/(e^2*x + d*e)
```

Sympy [A] time = 0.448629, size = 75, normalized size = 0.74

$$-\frac{bg\log\left(c\left(d+ex\right)\right)^{2}}{de+e^{2}x}+\frac{\left(-ag-bf-2bg\right)\log\left(c\left(d+ex\right)\right)}{de+e^{2}x}-\frac{af+ag+bf+2bg}{de+e^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(e*x+d)))*(f+g*ln(c*(e*x+d)))/(e*x+d)**2,x)
```

```
[Out] -b*g*log(c*(d + e*x))**2/(d*e + e**2*x) + (-a*g - b*f - 2*b*g)*log(c*(d + e
*x))/(d*e + e**2*x) - (a*f + a*g + b*f + 2*b*g)/(d*e + e**2*x)
```

Giac [A] time = 1.2507, size = 104, normalized size = 1.02

$$-\frac{bge^{(-1)}\log\left((xe+d)ce\right)^{2}}{xe+d}-\frac{\left(bf+ag\right)e^{(-1)}\log\left((xe+d)ce\right)}{xe+d}-\frac{\left(af+bg\right)e^{(-1)}}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(e*x+d)))*(f+g*log(c*(e*x+d)))/(e*x+d)^2,x, algorithm=
"giac")
```

```
[Out] -b*g*e^(-1)*log((x*e + d)*c*e)^2/(x*e + d) - (b*f + a*g)*e^(-1)*log((x*e +
d)*c*e)/(x*e + d) - (a*f + b*g)*e^(-1)/(x*e + d)
```

3.404 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4 dx$

Optimal. Leaf size=160

$$\frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-24ab^3m^3n^3x-\frac{4bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{(e+\ldots}{\ldots}$$

```
[Out] -24*a*b^3*m^3*n^3*x + 24*b^4*m^4*n^4*x - (24*b^4*m^3*n^3*(e + f*x)*Log[c*(d
*(e + f*x)^m)^n])/f + (12*b^2*m^2*n^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2)/f - (4*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4)/f
```

Rubi [A] time = 0.200817, antiderivative size = 160, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2296, 2295, 2445}

$$\frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-24ab^3m^3n^3x-\frac{4bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{(e+\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^4,x]
```


```
[Out] -24*a*b^3*m^3*n^3*x + 24*b^4*m^4*n^4*x - (24*b^4*m^3*n^3*(e + f*x)*Log[c*(d
*(e + f*x)^m)^n])/f + (12*b^2*m^2*n^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2)/f - (4*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4)/f
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^4 dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^n x^{mn}))^4 dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)\right.\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4}{f} - \text{Subst}\left(\frac{(4bmn)\,\text{Subst}\left(\int (a+b\log(cd\right.}{f}\right.$$

$$= -\frac{4bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)\right.\right.\right.}{f}$$

$$= \frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \frac{4bmn(e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.}{f}$$

$$= -24ab^3m^3n^3x + \frac{12b^2m^2n^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \frac{4bmn(e+fx}{}$$

$$= -24ab^3m^3n^3x + 24b^4m^4n^4x - \frac{24b^4m^3n^3(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} + \frac{12b^2m^2}{}$$

Mathematica [A] time = 0.0656032, size = 132, normalized size = 0.82

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^4 - 4bmn\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3 - 3bmn\left((e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^4,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^4 - 4*b*m*n*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^m)^n])^3 - 3*b*m*n*((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m
)^n])^2 - 2*b*m*n*(f*(a - b*m*n)*x + b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n]))
))/f
```

Maple [F] time = 0.516, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)\right)^4 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^4,x)
```

Maxima [B] time = 1.17562, size = 755, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="maxima")
```

```
[Out] b^4*x*log(((f*x + e)^m*d)^n*c)^4 - 4*a^3*b*f*m*n*(x/f - e*log(f*x + e)/f^2)
 + 4*a*b^3*x*log(((f*x + e)^m*d)^n*c)^3 + 6*a^2*b^2*x*log(((f*x + e)^m*d)^n
*c)^2 + 4*a^3*b*x*log(((f*x + e)^m*d)^n*c) - 6*(2*f*m*n*(x/f - e*log(f*x +
e)/f^2)*log(((f*x + e)^m*d)^n*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
+ e))*m^2*n^2/f)*a^2*b^2 - 4*(3*f*m*n*(x/f - e*log(f*x + e)/f^2)*log(((f*x
+ e)^m*d)^n*c)^2 - ((e*log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*lo
g(f*x + e))*m^2*n^2/f^2 - 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m
*n*log(((f*x + e)^m*d)^n*c)/f^2)*f*m*n)*a*b^3 - (4*f*m*n*(x/f - e*log(f*x +
 e)/f^2)*log(((f*x + e)^m*d)^n*c)^3 + (((e*log(f*x + e)^4 + 4*e*log(f*x + e
)^3 + 12*e*log(f*x + e)^2 - 24*f*x + 24*e*log(f*x + e))*m^2*n^2/f^3 - 4*(e*
log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*m*n*log(((f
*x + e)^m*d)^n*c)/f^3)*f*m*n + 6*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x +
e))*m*n*log(((f*x + e)^m*d)^n*c)^2/f^2)*f*m*n)*b^4 + a^4*x
```

Fricas [B] time = 2.82963, size = 2973, normalized size = 18.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="fricas")
```

```
[Out] (b^4*f*n^4*x*log(d)^4 + b^4*f*x*log(c)^4 + (b^4*f*m^4*n^4*x + b^4*e*m^4*n^4
)*log(f*x + e)^4 - 4*(b^4*f*m*n - a*b^3*f)*x*log(c)^3 - 4*(b^4*e*m^4*n^4 -
a*b^3*e*m^3*n^3 + (b^4*f*m^4*n^4 - a*b^3*f*m^3*n^3)*x - (b^4*f*m^3*n^3*x +
b^4*e*m^3*n^3)*log(c) - (b^4*f*m^3*n^4*x + b^4*e*m^3*n^4)*log(d))*log(f*x +
 e)^3 + 6*(2*b^4*f*m^2*n^2 - 2*a*b^3*f*m*n + a^2*b^2*f)*x*log(c)^2 + 4*(b^4
*f*n^3*x*log(c) - (b^4*f*m*n^4 - a*b^3*f*n^3)*x)*log(d)^3 + 6*(2*b^4*e*m^4*
n^4 - 2*a*b^3*e*m^3*n^3 + a^2*b^2*e*m^2*n^2 + (b^4*f*m^2*n^2*x + b^4*e*m^2*
n^2)*log(c)^2 + (b^4*f*m^2*n^4*x + b^4*e*m^2*n^4)*log(d)^2 + (2*b^4*f*m^4*n
^4 - 2*a*b^3*f*m^3*n^3 + a^2*b^2*f*m^2*n^2)*x - 2*(b^4*e*m^3*n^3 - a*b^3*e*
m^2*n^2 + (b^4*f*m^3*n^3 - a*b^3*f*m^2*n^2)*x)*log(c) - 2*(b^4*e*m^3*n^4 -
a*b^3*e*m^2*n^3 + (b^4*f*m^3*n^4 - a*b^3*f*m^2*n^3)*x - (b^4*f*m^2*n^3*x +
b^4*e*m^2*n^3)*log(c))*log(d))*log(f*x + e)^2 - 4*(6*b^4*f*m^3*n^3 - 6*a*b^
3*f*m^2*n^2 + 3*a^2*b^2*f*m*n - a^3*b*f)*x*log(c) + 6*(b^4*f*n^2*x*log(c)^2
 - 2*(b^4*f*m*n^3 - a*b^3*f*n^2)*x*log(c) + (2*b^4*f*m^2*n^4 - 2*a*b^3*f*m*
n^3 + a^2*b^2*f*n^2)*x)*log(d)^2 + (24*b^4*f*m^4*n^4 - 24*a*b^3*f*m^3*n^3 +
 12*a^2*b^2*f*m^2*n^2 - 4*a^3*b*f*m*n + a^4*f)*x - 4*(6*b^4*e*m^4*n^4 - 6*a
*b^3*e*m^3*n^3 + 3*a^2*b^2*e*m^2*n^2 - a^3*b*e*m*n - (b^4*f*m*n*x + b^4*e*m
*n)*log(c)^3 - (b^4*f*m*n^4*x + b^4*e*m*n^4)*log(d)^3 + 3*(b^4*e*m^2*n^2 -
a*b^3*e*m*n + (b^4*f*m^2*n^2 - a*b^3*f*m*n)*x)*log(c)^2 + 3*(b^4*e*m^2*n^4
- a*b^3*e*m*n^3 + (b^4*f*m^2*n^4 - a*b^3*f*m*n^3)*x - (b^4*f*m*n^3*x + b^4*
e*m*n^3)*log(c))*log(d)^2 + (6*b^4*f*m^4*n^4 - 6*a*b^3*f*m^3*n^3 + 3*a^2*b^
2*f*m^2*n^2 - a^3*b*f*m*n)*x - 3*(2*b^4*e*m^3*n^3 - 2*a*b^3*e*m^2*n^2 + a^2
*b^2*e*m*n + (2*b^4*f*m^3*n^3 - 2*a*b^3*f*m^2*n^2 + a^2*b^2*f*m*n)*x)*log(c
) - 3*(2*b^4*e*m^3*n^4 - 2*a*b^3*e*m^2*n^3 + a^2*b^2*e*m*n^2 + (b^4*f*m*n^2
*x + b^4*e*m*n^2)*log(c)^2 + (2*b^4*f*m^3*n^4 - 2*a*b^3*f*m^2*n^3 + a^2*b^2
*f*m*n^2)*x - 2*(b^4*e*m^2*n^3 - a*b^3*e*m*n^2 + (b^4*f*m^2*n^3 - a*b^3*f*m
*n^2)*x)*log(c))*log(d))*log(f*x + e) + 4*(b^4*f*n*x*log(c)^3 - 3*(b^4*f*m*
n^2 - a*b^3*f*n)*x*log(c)^2 + 3*(2*b^4*f*m^2*n^3 - 2*a*b^3*f*m*n^2 + a^2*b^
2*f*n)*x*log(c) - (6*b^4*f*m^3*n^4 - 6*a*b^3*f*m^2*n^3 + 3*a^2*b^2*f*m*n^2
- a^3*b*f*n)*x)*log(d))/f
```

Sympy [A] time = 26.0857, size = 2390, normalized size = 14.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*e*m*n*log(e + f*x)/f + 4*a**3*b*m*n*x*log(e +
f*x) - 4*a**3*b*m*n*x + 4*a**3*b*n*x*log(d) + 4*a**3*b*x*log(c) + 6*a**2*b*
*2*e*m**2*n**2*log(e + f*x)**2/f - 12*a**2*b**2*e*m**2*n**2*log(e + f*x)/f
+ 12*a**2*b**2*e*m*n**2*log(d)*log(e + f*x)/f + 12*a**2*b**2*e*m*n*log(c)*l
og(e + f*x)/f + 6*a**2*b**2*m**2*n**2*x*log(e + f*x)**2 - 12*a**2*b**2*m**2
*n**2*x*log(e + f*x) + 12*a**2*b**2*m**2*n**2*x + 12*a**2*b**2*m*n**2*x*log
(d)*log(e + f*x) - 12*a**2*b**2*m*n**2*x*log(d) + 12*a**2*b**2*m*n*x*log(c)
*log(e + f*x) - 12*a**2*b**2*m*n*x*log(c) + 6*a**2*b**2*n**2*x*log(d)**2 +
12*a**2*b**2*n*x*log(c)*log(d) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*e*m**3*
n**3*log(e + f*x)**3/f - 12*a*b**3*e*m**3*n**3*log(e + f*x)**2/f + 24*a*b**
3*e*m**3*n**3*log(e + f*x)/f + 12*a*b**3*e*m**2*n**3*log(d)*log(e + f*x)**2
/f - 24*a*b**3*e*m**2*n**3*log(d)*log(e + f*x)/f + 12*a*b**3*e*m**2*n**2*lo
g(c)*log(e + f*x)**2/f - 24*a*b**3*e*m**2*n**2*log(c)*log(e + f*x)/f + 12*a
*b**3*e*m*n**3*log(d)**2*log(e + f*x)/f + 24*a*b**3*e*m*n**2*log(c)*log(d)*
log(e + f*x)/f + 12*a*b**3*e*m*n*log(c)**2*log(e + f*x)/f + 4*a*b**3*m**3*n
**3*x*log(e + f*x)**3 - 12*a*b**3*m**3*n**3*x*log(e + f*x)**2 + 24*a*b**3*m
**3*n**3*x*log(e + f*x) - 24*a*b**3*m**3*n**3*x + 12*a*b**3*m**2*n**3*x*log
(d)*log(e + f*x)**2 - 24*a*b**3*m**2*n**3*x*log(d)*log(e + f*x) + 24*a*b**3
*m**2*n**3*x*log(d) + 12*a*b**3*m**2*n**2*x*log(c)*log(e + f*x)**2 - 24*a*b
**3*m**2*n**2*x*log(c)*log(e + f*x) + 24*a*b**3*m**2*n**2*x*log(c) + 12*a*b
**3*m*n**3*x*log(d)**2*log(e + f*x) - 12*a*b**3*m*n**3*x*log(d)**2 + 24*a*b
**3*m*n**2*x*log(c)*log(d)*log(e + f*x) - 24*a*b**3*m*n**2*x*log(c)*log(d)
+ 12*a*b**3*m*n*x*log(c)**2*log(e + f*x) - 12*a*b**3*m*n*x*log(c)**2 + 4*a*
b**3*n**3*x*log(d)**3 + 12*a*b**3*n**2*x*log(c)*log(d)**2 + 12*a*b**3*n*x*l
og(c)**2*log(d) + 4*a*b**3*x*log(c)**3 + b**4*e*m**4*n**4*log(e + f*x)**4/f
 - 4*b**4*e*m**4*n**4*log(e + f*x)**3/f + 12*b**4*e*m**4*n**4*log(e + f*x)*
*2/f - 24*b**4*e*m**4*n**4*log(e + f*x)/f + 4*b**4*e*m**3*n**4*log(d)*log(e
 + f*x)**3/f - 12*b**4*e*m**3*n**4*log(d)*log(e + f*x)**2/f + 24*b**4*e*m**
3*n**4*log(d)*log(e + f*x)/f + 4*b**4*e*m**3*n**3*log(c)*log(e + f*x)**3/f
- 12*b**4*e*m**3*n**3*log(c)*log(e + f*x)**2/f + 24*b**4*e*m**3*n**3*log(c)
*log(e + f*x)/f + 6*b**4*e*m**2*n**4*log(d)**2*log(e + f*x)**2/f - 12*b**4*
e*m**2*n**4*log(d)**2*log(e + f*x)/f + 12*b**4*e*m**2*n**3*log(c)*log(d)*lo
g(e + f*x)**2/f - 24*b**4*e*m**2*n**3*log(c)*log(d)*log(e + f*x)/f + 6*b**4
*e*m**2*n**2*log(c)**2*log(e + f*x)**2/f - 12*b**4*e*m**2*n**2*log(c)**2*lo
g(e + f*x)/f + 4*b**4*e*m*n**4*log(d)**3*log(e + f*x)/f + 12*b**4*e*m*n**3*
log(c)*log(d)**2*log(e + f*x)/f + 12*b**4*e*m*n**2*log(c)**2*log(d)*log(e +
 f*x)/f + 4*b**4*e*m*n*log(c)**3*log(e + f*x)/f + b**4*m**4*n**4*x*log(e +
f*x)**4 - 4*b**4*m**4*n**4*x*log(e + f*x)**3 + 12*b**4*m**4*n**4*x*log(e +
f*x)**2 - 24*b**4*m**4*n**4*x*log(e + f*x) + 24*b**4*m**4*n**4*x + 4*b**4*m
**3*n**4*x*log(d)*log(e + f*x)**3 - 12*b**4*m**3*n**4*x*log(d)*log(e + f*x)
**2 + 24*b**4*m**3*n**4*x*log(d)*log(e + f*x) - 24*b**4*m**3*n**4*x*log(d)
+ 4*b**4*m**3*n**3*x*log(c)*log(e + f*x)**3 - 12*b**4*m**3*n**3*x*log(c)*lo
g(e + f*x)**2 + 24*b**4*m**3*n**3*x*log(c)*log(e + f*x) - 24*b**4*m**3*n**3
*x*log(c) + 6*b**4*m**2*n**4*x*log(d)**2*log(e + f*x)**2 - 12*b**4*m**2*n**
4*x*log(d)**2*log(e + f*x) + 12*b**4*m**2*n**4*x*log(d)**2 + 12*b**4*m**2*n
**3*x*log(c)*log(d)*log(e + f*x)**2 - 24*b**4*m**2*n**3*x*log(c)*log(d)*log
(e + f*x) + 24*b**4*m**2*n**3*x*log(c)*log(d) + 6*b**4*m**2*n**2*x*log(c)**
2*log(e + f*x)**2 - 12*b**4*m**2*n**2*x*log(c)**2*log(e + f*x) + 12*b**4*m*
*2*n**2*x*log(c)**2 + 4*b**4*m*n**4*x*log(d)**3*log(e + f*x) - 4*b**4*m*n**
4*x*log(d)**3 + 12*b**4*m*n**3*x*log(c)*log(d)**2*log(e + f*x) - 12*b**4*m*
```

```
n**3*x*log(c)*log(d)**2 + 12*b**4*m*n**2*x*log(c)**2*log(d)*log(e + f*x) -
12*b**4*m*n**2*x*log(c)**2*log(d) + 4*b**4*m*n*x*log(c)**3*log(e + f*x) - 4
*b**4*m*n*x*log(c)**3 + b**4*n**4*x*log(d)**4 + 4*b**4*n**3*x*log(c)*log(d)
**3 + 6*b**4*n**2*x*log(c)**2*log(d)**2 + 4*b**4*n*x*log(c)**3*log(d) + b**
4*x*log(c)**4, Ne(f, 0)), (x*(a + b*log(c*(d*e**m)**n))**4, True))
```

Giac [B] time = 1.31606, size = 2433, normalized size = 15.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^4,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^4*m^4*n^4*log(f*x + e)^4/f - 4*(f*x + e)*b^4*m^4*n^4*log(f*x +
e)^3/f + 4*(f*x + e)*b^4*m^3*n^4*log(f*x + e)^3*log(d)/f + 12*(f*x + e)*b^4
*m^4*n^4*log(f*x + e)^2/f + 4*(f*x + e)*b^4*m^3*n^3*log(f*x + e)^3*log(c)/f
 - 12*(f*x + e)*b^4*m^3*n^4*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^4*m^2*n
^4*log(f*x + e)^2*log(d)^2/f - 24*(f*x + e)*b^4*m^4*n^4*log(f*x + e)/f + 4*
(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)^3/f - 12*(f*x + e)*b^4*m^3*n^3*log(f*x
 + e)^2*log(c)/f + 24*(f*x + e)*b^4*m^3*n^4*log(f*x + e)*log(d)/f + 12*(f*x
 + e)*b^4*m^2*n^3*log(f*x + e)^2*log(c)*log(d)/f - 12*(f*x + e)*b^4*m^2*n^4
*log(f*x + e)*log(d)^2/f + 4*(f*x + e)*b^4*m*n^4*log(f*x + e)*log(d)^3/f +
24*(f*x + e)*b^4*m^4*n^4/f - 12*(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)^2/f +
24*(f*x + e)*b^4*m^3*n^3*log(f*x + e)*log(c)/f + 6*(f*x + e)*b^4*m^2*n^2*lo
g(f*x + e)^2*log(c)^2/f - 24*(f*x + e)*b^4*m^3*n^4*log(d)/f + 12*(f*x + e)*
a*b^3*m^2*n^3*log(f*x + e)^2*log(d)/f - 24*(f*x + e)*b^4*m^2*n^3*log(f*x +
e)*log(c)*log(d)/f + 12*(f*x + e)*b^4*m^2*n^4*log(d)^2/f + 12*(f*x + e)*b^4
*m*n^3*log(f*x + e)*log(c)*log(d)^2/f - 4*(f*x + e)*b^4*m*n^4*log(d)^3/f +
(f*x + e)*b^4*n^4*log(d)^4/f + 24*(f*x + e)*a*b^3*m^3*n^3*log(f*x + e)/f -
24*(f*x + e)*b^4*m^3*n^3*log(c)/f + 12*(f*x + e)*a*b^3*m^2*n^2*log(f*x + e)
^2*log(c)/f - 12*(f*x + e)*b^4*m^2*n^2*log(f*x + e)*log(c)^2/f - 24*(f*x +
e)*a*b^3*m^2*n^3*log(f*x + e)*log(d)/f + 24*(f*x + e)*b^4*m^2*n^3*log(c)*lo
g(d)/f + 12*(f*x + e)*b^4*m*n^2*log(f*x + e)*log(c)^2*log(d)/f + 12*(f*x +
e)*a*b^3*m*n^3*log(f*x + e)*log(d)^2/f - 12*(f*x + e)*b^4*m*n^3*log(c)*log(
d)^2/f + 4*(f*x + e)*b^4*n^3*log(c)*log(d)^3/f - 24*(f*x + e)*a*b^3*m^3*n^3
/f + 6*(f*x + e)*a^2*b^2*m^2*n^2*log(f*x + e)^2/f - 24*(f*x + e)*a*b^3*m^2*
n^2*log(f*x + e)*log(c)/f + 12*(f*x + e)*b^4*m^2*n^2*log(c)^2/f + 4*(f*x +
e)*b^4*m*n*log(f*x + e)*log(c)^3/f + 24*(f*x + e)*a*b^3*m^2*n^3*log(d)/f +
24*(f*x + e)*a*b^3*m*n^2*log(f*x + e)*log(c)*log(d)/f - 12*(f*x + e)*b^4*m*
n^2*log(c)^2*log(d)/f - 12*(f*x + e)*a*b^3*m*n^3*log(d)^2/f + 6*(f*x + e)*b
^4*n^2*log(c)^2*log(d)^2/f + 4*(f*x + e)*a*b^3*n^3*log(d)^3/f - 12*(f*x + e
)*a^2*b^2*m^2*n^2*log(f*x + e)/f + 24*(f*x + e)*a*b^3*m^2*n^2*log(c)/f + 12
*(f*x + e)*a*b^3*m*n*log(f*x + e)*log(c)^2/f - 4*(f*x + e)*b^4*m*n*log(c)^3
/f + 12*(f*x + e)*a^2*b^2*m*n^2*log(f*x + e)*log(d)/f - 24*(f*x + e)*a*b^3*
m*n^2*log(c)*log(d)/f + 4*(f*x + e)*b^4*n*log(c)^3*log(d)/f + 12*(f*x + e)*
a*b^3*n^2*log(c)*log(d)^2/f + 12*(f*x + e)*a^2*b^2*m^2*n^2/f + 12*(f*x + e)
*a^2*b^2*m*n*log(f*x + e)*log(c)/f - 12*(f*x + e)*a*b^3*m*n*log(c)^2/f + (f
*x + e)*b^4*log(c)^4/f - 12*(f*x + e)*a^2*b^2*m*n^2*log(d)/f + 12*(f*x + e)
*a*b^3*n*log(c)^2*log(d)/f + 6*(f*x + e)*a^2*b^2*n^2*log(d)^2/f + 4*(f*x +
e)*a^3*b*m*n*log(f*x + e)/f - 12*(f*x + e)*a^2*b^2*m*n*log(c)/f + 4*(f*x +
e)*a*b^3*log(c)^3/f + 12*(f*x + e)*a^2*b^2*n*log(c)*log(d)/f - 4*(f*x + e)*
a^3*b*m*n/f + 6*(f*x + e)*a^2*b^2*log(c)^2/f + 4*(f*x + e)*a^3*b*n*log(d)/f
 + 4*(f*x + e)*a^3*b*log(c)/f + (f*x + e)*a^4/f
```

3.405 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3\,dx$

Optimal. Leaf size=121

$$6ab^2m^2n^2x-\frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{6b^3m^2n^2(e+fx)}{}$$

```
[Out] 6*a*b^2*m^2*n^2*x - 6*b^3*m^3*n^3*x + (6*b^3*m^2*n^2*(e + f*x)*Log[c*(d*(e
+ f*x)^m)^n])/f - (3*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f
```

Rubi [A] time = 0.140638, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2296, 2295, 2445}

$$6ab^2m^2n^2x-\frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f}+\frac{6b^3m^2n^2(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^3,x]
```

```
[Out] 6*a*b^2*m^2*n^2*x - 6*b^3*m^3*n^3*x + (6*b^3*m^2*n^2*(e + f*x)*Log[c*(d*(e
+ f*x)^m)^n])/f - (3*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3)/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^3 dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^nx^{mn}))^3 dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+f\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}{f} - \text{Subst}\left(\frac{(3bmn)\,\text{Subst}\left(\int (a+b\log(\right.}{f}\right.$$
$$= -\frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{f}$$
$$= 6ab^2m^2n^2x - \frac{3bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} + \frac{(e+fx)\left(a+b\log\right.}{}$$
$$= 6ab^2m^2n^2x - 6b^3m^3n^3x + \frac{6b^3m^2n^2(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} - \frac{3bmn(e+}{}$$

Mathematica [A] time = 0.0129385, size = 100, normalized size = 0.83

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3 - 3bmn\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2 - 2bmn\left(fx(a-bmn)+b(e+\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^3,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^3 - 3*b*m*n*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^m)^n])^2 - 2*b*m*n*(f*(a - b*m*n)*x + b*(e + f*x)*Log[c*(
d*(e + f*x)^m)^n])))/f
```

Maple [F] time = 0.093, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)
```

Maxima [B] time = 1.15841, size = 428, normalized size = 3.54

$$-3a^2bfmn\left(\frac{x}{f} - \frac{e\log(fx+e)}{f^2}\right) + b^3x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^3 + 3ab^2x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2 + 3a^2bx\log\left(\left(\left(fx+e\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b^3*x*log(((f*x + e)^m*d)^n*c)^
3 + 3*a*b^2*x*log(((f*x + e)^m*d)^n*c)^2 + 3*a^2*b*x*log(((f*x + e)^m*d)^n*
c) - 3*(2*f*m*n*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^m*d)^n*c) + (e*lo
g(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m^2*n^2/f)*a*b^2 - (3*f*m*n*(x/f -
 e*log(f*x + e)/f^2)*log(((f*x + e)^m*d)^n*c)^2 - ((e*log(f*x + e)^3 + 3*e*
log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*m^2*n^2/f^2 - 3*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*m*n*log(((f*x + e)^m*d)^n*c)/f^2)*f*m*n)*b^3
+ a^3*x
```

Fricas [B] time = 2.45365, size = 1374, normalized size = 11.36

$$b^3fn^3x\log(d)^3 + b^3fx\log(c)^3 + \left(b^3fm^3n^3x + b^3em^3n^3\right)\log\left(fx+e\right)^3 - 3\left(b^3fmn - ab^2f\right)x\log(c)^2 - 3\left(b^3em^3n^3 - ab^2e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="fricas")
```

```
[Out] (b^3*f*n^3*x*log(d)^3 + b^3*f*x*log(c)^3 + (b^3*f*m^3*n^3*x + b^3*e*m^3*n^3
)*log(f*x + e)^3 - 3*(b^3*f*m*n - a*b^2*f)*x*log(c)^2 - 3*(b^3*e*m^3*n^3 -
a*b^2*e*m^2*n^2 + (b^3*f*m^3*n^3 - a*b^2*f*m^2*n^2)*x - (b^3*f*m^2*n^2*x +
b^3*e*m^2*n^2)*log(c) - (b^3*f*m^2*n^3*x + b^3*e*m^2*n^3)*log(d))*log(f*x +
 e)^2 + 3*(2*b^3*f*m^2*n^2 - 2*a*b^2*f*m*n + a^2*b*f)*x*log(c) + 3*(b^3*f*n
^2*x*log(c) - (b^3*f*m*n^3 - a*b^2*f*n^2)*x)*log(d)^2 - (6*b^3*f*m^3*n^3 -
6*a*b^2*f*m^2*n^2 + 3*a^2*b*f*m*n - a^3*f)*x + 3*(2*b^3*e*m^3*n^3 - 2*a*b^2
*e*m^2*n^2 + a^2*b*e*m*n + (b^3*f*m*n*x + b^3*e*m*n)*log(c)^2 + (b^3*f*m*n^
3*x + b^3*e*m*n^3)*log(d)^2 + (2*b^3*f*m^3*n^3 - 2*a*b^2*f*m^2*n^2 + a^2*b*
f*m*n)*x - 2*(b^3*e*m^2*n^2 - a*b^2*e*m*n + (b^3*f*m^2*n^2 - a*b^2*f*m*n)*x
)*log(c) - 2*(b^3*e*m^2*n^3 - a*b^2*e*m*n^2 + (b^3*f*m^2*n^3 - a*b^2*f*m*n^
2)*x - (b^3*f*m*n^2*x + b^3*e*m*n^2)*log(c))*log(d))*log(f*x + e) + 3*(b^3*
f*n*x*log(c)^2 - 2*(b^3*f*m*n^2 - a*b^2*f*n)*x*log(c) + (2*b^3*f*m^2*n^3 -
2*a*b^2*f*m*n^2 + a^2*b*f*n)*x)*log(d))/f
```

Sympy [A] time = 9.33698, size = 1023, normalized size = 8.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*e*m*n*log(e + f*x)/f + 3*a**2*b*m*n*x*log(e +
f*x) - 3*a**2*b*m*n*x + 3*a**2*b*n*x*log(d) + 3*a**2*b*x*log(c) + 3*a*b**2*
e*m**2*n**2*log(e + f*x)**2/f - 6*a*b**2*e*m**2*n**2*log(e + f*x)/f + 6*a*b
**2*e*m*n**2*log(d)*log(e + f*x)/f + 6*a*b**2*e*m*n*log(c)*log(e + f*x)/f +
 3*a*b**2*m**2*n**2*x*log(e + f*x)**2 - 6*a*b**2*m**2*n**2*x*log(e + f*x) +
 6*a*b**2*m**2*n**2*x + 6*a*b**2*m*n**2*x*log(d)*log(e + f*x) - 6*a*b**2*m*
n**2*x*log(d) + 6*a*b**2*m*n*x*log(c)*log(e + f*x) - 6*a*b**2*m*n*x*log(c)
+ 3*a*b**2*n**2*x*log(d)**2 + 6*a*b**2*n*x*log(c)*log(d) + 3*a*b**2*x*log(c
)**2 + b**3*e*m**3*n**3*log(e + f*x)**3/f - 3*b**3*e*m**3*n**3*log(e + f*x)
**2/f + 6*b**3*e*m**3*n**3*log(e + f*x)/f + 3*b**3*e*m**2*n**3*log(d)*log(e
 + f*x)**2/f - 6*b**3*e*m**2*n**3*log(d)*log(e + f*x)/f + 3*b**3*e*m**2*n**
```

```
2*log(c)*log(e + f*x)**2/f - 6*b**3*e*m**2*n**2*log(c)*log(e + f*x)/f + 3*b
**3*e*m*n**3*log(d)**2*log(e + f*x)/f + 6*b**3*e*m*n**2*log(c)*log(d)*log(e
 + f*x)/f + 3*b**3*e*m*n*log(c)**2*log(e + f*x)/f + b**3*m**3*n**3*x*log(e
+ f*x)**3 - 3*b**3*m**3*n**3*x*log(e + f*x)**2 + 6*b**3*m**3*n**3*x*log(e +
 f*x) - 6*b**3*m**3*n**3*x + 3*b**3*m**2*n**3*x*log(d)*log(e + f*x)**2 - 6*
b**3*m**2*n**3*x*log(d)*log(e + f*x) + 6*b**3*m**2*n**3*x*log(d) + 3*b**3*m
**2*n**2*x*log(c)*log(e + f*x)**2 - 6*b**3*m**2*n**2*x*log(c)*log(e + f*x)
+ 6*b**3*m**2*n**2*x*log(c) + 3*b**3*m*n**3*x*log(d)**2*log(e + f*x) - 3*b*
*3*m*n**3*x*log(d)**2 + 6*b**3*m*n**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3
*m*n**2*x*log(c)*log(d) + 3*b**3*m*n*x*log(c)**2*log(e + f*x) - 3*b**3*m*n*
x*log(c)**2 + b**3*n**3*x*log(d)**3 + 3*b**3*n**2*x*log(c)*log(d)**2 + 3*b*
*3*n*x*log(c)**2*log(d) + b**3*x*log(c)**3, Ne(f, 0)), (x*(a + b*log(c*(d*e
**m)**n))**3, True))
```

Giac [B] time = 1.2314, size = 1110, normalized size = 9.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*m^3*n^3*log(f*x + e)^3/f - 3*(f*x + e)*b^3*m^3*n^3*log(f*x +
e)^2/f + 3*(f*x + e)*b^3*m^2*n^3*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^3*
m^3*n^3*log(f*x + e)/f + 3*(f*x + e)*b^3*m^2*n^2*log(f*x + e)^2*log(c)/f -
6*(f*x + e)*b^3*m^2*n^3*log(f*x + e)*log(d)/f + 3*(f*x + e)*b^3*m*n^3*log(f
*x + e)*log(d)^2/f - 6*(f*x + e)*b^3*m^3*n^3/f + 3*(f*x + e)*a*b^2*m^2*n^2*
log(f*x + e)^2/f - 6*(f*x + e)*b^3*m^2*n^2*log(f*x + e)*log(c)/f + 6*(f*x +
 e)*b^3*m^2*n^3*log(d)/f + 6*(f*x + e)*b^3*m*n^2*log(f*x + e)*log(c)*log(d)
/f - 3*(f*x + e)*b^3*m*n^3*log(d)^2/f + (f*x + e)*b^3*n^3*log(d)^3/f - 6*(f
*x + e)*a*b^2*m^2*n^2*log(f*x + e)/f + 6*(f*x + e)*b^3*m^2*n^2*log(c)/f + 3
*(f*x + e)*b^3*m*n*log(f*x + e)*log(c)^2/f + 6*(f*x + e)*a*b^2*m*n^2*log(f*
x + e)*log(d)/f - 6*(f*x + e)*b^3*m*n^2*log(c)*log(d)/f + 3*(f*x + e)*b^3*n
^2*log(c)*log(d)^2/f + 6*(f*x + e)*a*b^2*m^2*n^2/f + 6*(f*x + e)*a*b^2*m*n*
log(f*x + e)*log(c)/f - 3*(f*x + e)*b^3*m*n*log(c)^2/f - 6*(f*x + e)*a*b^2*
m*n^2*log(d)/f + 3*(f*x + e)*b^3*n*log(c)^2*log(d)/f + 3*(f*x + e)*a*b^2*n^
2*log(d)^2/f + 3*(f*x + e)*a^2*b*m*n*log(f*x + e)/f - 6*(f*x + e)*a*b^2*m*n
*log(c)/f + (f*x + e)*b^3*log(c)^3/f + 6*(f*x + e)*a*b^2*n*log(c)*log(d)/f
- 3*(f*x + e)*a^2*b*m*n/f + 3*(f*x + e)*a*b^2*log(c)^2/f + 3*(f*x + e)*a^2*
b*n*log(d)/f + 3*(f*x + e)*a^2*b*log(c)/f + (f*x + e)*a^3/f
```

3.406 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2\,dx$

Optimal. Leaf size=78

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-2abmnx-\frac{2b^2mn(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}+2b^2m^2n^2x$$

```
[Out] -2*a*b*m*n*x + 2*b^2*m^2*n^2*x - (2*b^2*m*n*(e + f*x)*Log[c*(d*(e + f*x)^m)
^n])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
```

Rubi [A] time = 0.0944507, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2296, 2295, 2445}

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f}-2abmnx-\frac{2b^2mn(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}+2b^2m^2n^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^2,x]
```

```
[Out] -2*a*b*m*n*x + 2*b^2*m^2*n^2*x - (2*b^2*m*n*(e + f*x)*Log[c*(d*(e + f*x)^m)
^n])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^2 dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^nx^{mn}))^2 dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+f\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \text{Subst}\left(\frac{(2bmn)\,\text{Subst}\left(\int (a+b\log(\right.}{f}\right.$$
$$= -2abmnx + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - \text{Subst}\left(\frac{(2b^2mn)\,\text{Subst}}{}\right.$$
$$= -2abmnx + 2b^2m^2n^2x - \frac{2b^2mn(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} + \frac{(e+fx)\left(a+\right.}{}$$

Mathematica [A] time = 0.0096565, size = 69, normalized size = 0.88

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}{f} - 2bmn\left(ax + \frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f} - bmnx\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^2)/f - 2*b*m*n*(a*x - b*m*n*x +
 (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f)
```

Maple [F] time = 0.095, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

Maxima [A] time = 1.10344, size = 200, normalized size = 2.56

$$-2\,abfmn\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right) + b^2x\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)^2 + 2\,abx\log\left(\left(\left(fx+e\right)^m d\right)^n c\right) - \left(2\,fmn\left(\frac{x}{f} - \frac{e\log\left(fx+\right.}{f^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b^2*x*log(((f*x + e)^m*d)^n*c)^2
+ 2*a*b*x*log(((f*x + e)^m*d)^n*c) - (2*f*m*n*(x/f - e*log(f*x + e)/f^2)*lo
g(((f*x + e)^m*d)^n*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*m^2*
n^2/f)*b^2 + a^2*x
```

Fricas [B] time = 2.29019, size = 516, normalized size = 6.62

$$\frac{b^2fn^2x\log(d)^2 + b^2fx\log(c)^2 + \left(b^2fm^2n^2x + b^2em^2n^2\right)\log\left(fx+e\right)^2 - 2\left(b^2fmn - abf\right)x\log(c) + \left(2\,b^2fm^2n^2 - 2\,abf\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="fricas")
```

```
[Out] (b^2*f*n^2*x*log(d)^2 + b^2*f*x*log(c)^2 + (b^2*f*m^2*n^2*x + b^2*e*m^2*n^2
)*log(f*x + e)^2 - 2*(b^2*f*m*n - a*b*f)*x*log(c) + (2*b^2*f*m^2*n^2 - 2*a*
b*f*m*n + a^2*f)*x - 2*(b^2*e*m^2*n^2 - a*b*e*m*n + (b^2*f*m^2*n^2 - a*b*f*
m*n)*x - (b^2*f*m*n*x + b^2*e*m*n)*log(c) - (b^2*f*m*n^2*x + b^2*e*m*n^2)*l
og(d))*log(f*x + e) + 2*(b^2*f*n*x*log(c) - (b^2*f*m*n^2 - a*b*f*n)*x)*log(
d))/f
```

Sympy [A] time = 3.27153, size = 343, normalized size = 4.4

$$\begin{cases} a^2x + \frac{2abemn\log\left(e+fx\right)}{f} + 2abmnx\log\left(e+fx\right) - 2abmnx + 2abnx\log(d) + 2abx\log(c) + \frac{b^2em^2n^2\log\left(e+fx\right)^2}{f} - \frac{2b^2em^2n^2\log\left(e\right.}{f} \\ x\left(a + b\log\left(c\left(de^m\right)^n\right)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*e*m*n*log(e + f*x)/f + 2*a*b*m*n*x*log(e + f*x) -
 2*a*b*m*n*x + 2*a*b*n*x*log(d) + 2*a*b*x*log(c) + b**2*e*m**2*n**2*log(e +
 f*x)**2/f - 2*b**2*e*m**2*n**2*log(e + f*x)/f + 2*b**2*e*m*n**2*log(d)*log
(e + f*x)/f + 2*b**2*e*m*n*log(c)*log(e + f*x)/f + b**2*m**2*n**2*x*log(e +
 f*x)**2 - 2*b**2*m**2*n**2*x*log(e + f*x) + 2*b**2*m**2*n**2*x + 2*b**2*m*
n**2*x*log(d)*log(e + f*x) - 2*b**2*m*n**2*x*log(d) + 2*b**2*m*n*x*log(c)*l
og(e + f*x) - 2*b**2*m*n*x*log(c) + b**2*n**2*x*log(d)**2 + 2*b**2*n*x*log(
c)*log(d) + b**2*x*log(c)**2, Ne(f, 0)), (x*(a + b*log(c*(d*e**m)**n))**2,
True))
```

Giac [B] time = 1.22781, size = 409, normalized size = 5.24

$$\frac{\left(fx+e\right)b^2m^2n^2\log\left(fx+e\right)^2}{f} - \frac{2\left(fx+e\right)b^2m^2n^2\log\left(fx+e\right)}{f} + \frac{2\left(fx+e\right)b^2mn^2\log\left(fx+e\right)\log(d)}{f} + \frac{2\left(fx+e\right)b^2m^2}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*m^2*n^2*log(f*x + e)^2/f - 2*(f*x + e)*b^2*m^2*n^2*log(f*x +
e)/f + 2*(f*x + e)*b^2*m*n^2*log(f*x + e)*log(d)/f + 2*(f*x + e)*b^2*m^2*n^
```

```
2/f + 2*(f*x + e)*b^2*m*n*log(f*x + e)*log(c)/f - 2*(f*x + e)*b^2*m*n^2*log
(d)/f + (f*x + e)*b^2*n^2*log(d)^2/f + 2*(f*x + e)*a*b*m*n*log(f*x + e)/f -
 2*(f*x + e)*b^2*m*n*log(c)/f + 2*(f*x + e)*b^2*n*log(c)*log(d)/f - 2*(f*x
+ e)*a*b*m*n/f + (f*x + e)*b^2*log(c)^2/f + 2*(f*x + e)*a*b*n*log(d)/f + 2*
(f*x + e)*a*b*log(c)/f + (f*x + e)*a^2/f
```

3.407 $\int \left(a+b \log \left(c \left(d(e+f x)^m\right)^n\right)\right) \, dx$

Optimal. Leaf size=34

$$ax+\frac{b(e+f x) \log \left(c \left(d(e+f x)^m\right)^n\right)}{f}-b m n x$$

```
[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f
```

Rubi [A] time = 0.0315224, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2295, 2445}

$$ax+\frac{b(e+f x) \log \left(c \left(d(e+f x)^m\right)^n\right)}{f}-b m n x$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d*(e + f*x)^m)^n],x]
```

```
[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b \log \left(c \left(d(e+f x)^m\right)^n\right)\right) \, dx &= a x+b \int \log \left(c \left(d(e+f x)^m\right)^n\right) \, dx \\
&= a x+b \operatorname{Subst}\left(\int \log \left(c d^n (e+f x)^{m n}\right) \, dx,c d^n (e+f x)^{m n},c \left(d(e+f x)^m\right)^n\right) \\
&= a x+b \operatorname{Subst}\left(\frac{\operatorname{Subst}\left(\int \log \left(c d^n x^{m n}\right) \, dx,x,e+f x\right)}{f},c d^n (e+f x)^{m n},c \left(d(e+f x)^m\right)^n\right) \\
&= a x-b m n x+\frac{b(e+f x) \log \left(c \left(d(e+f x)^m\right)^n\right)}{f}
\end{aligned}$$

Mathematica [A] time = 0.006675, size = 34, normalized size = 1.

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^m\right)^n\right)}{f}-bmnx$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d*(e + f*x)^m)^n],x]
```

```
[Out] a*x - b*m*n*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^m)^n])/f
```

Maple [A] time = 0.066, size = 42, normalized size = 1.2

$$ax+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)x-bmnx+\frac{bemn\ln\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*ln(c*(d*(f*x+e)^m)^n),x)
```

```
[Out] a*x+b*ln(c*(d*(f*x+e)^m)^n)*x-b*m*n*x+b*e*m*n/f*ln(f*x+e)
```

Maxima [A] time = 1.12163, size = 61, normalized size = 1.79

$$-bfmn\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+bx\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="maxima")
```

```
[Out] -b*f*m*n*(x/f - e*log(f*x + e)/f^2) + b*x*log(((f*x + e)^m*d)^n*c) + a*x
```

Fricas [A] time = 2.27636, size = 124, normalized size = 3.65

$$\frac{bfnx\log\left(d\right)+bfx\log\left(c\right)-\left(bfmn-af\right)x+\left(bfmnx+bemn\right)\log\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="fricas")
```

```
[Out] (b*f*n*x*log(d) + b*f*x*log(c) - (b*f*m*n - a*f)*x + (b*f*m*n*x + b*e*m*n)*
log(f*x + e))/f
```

Sympy [A] time = 0.920717, size = 58, normalized size = 1.71

$$ax+b\left(\begin{cases}\frac{emn\log\left(e+fx\right)}{f}+mnx\log\left(e+fx\right)-mnx+nx\log\left(d\right)+x\log\left(c\right) & \text{for}\ f\neq 0\\ x\log\left(c\left(de^m\right)^n\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(d*(f*x+e)**m)**n),x)
```

```
[Out] a*x + b*Piecewise((e*m*n*log(e + f*x)/f + m*n*x*log(e + f*x) - m*n*x + n*x*
log(d) + x*log(c), Ne(f, 0)), (x*log(c*(d*e**m)**n), True))
```

Giac [A] time = 1.23734, size = 86, normalized size = 2.53

$$\left(\frac{(fx+e)mn\log(fx+e)}{f} - \frac{(fx+e)mn}{f} + \frac{(fx+e)n\log(d)}{f} + \frac{(fx+e)\log(c)}{f}\right)b + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^m)^n),x, algorithm="giac")
```

```
[Out] ((f*x + e)*m*n*log(f*x + e)/f - (f*x + e)*m*n/f + (f*x + e)*n*log(d)/f + (f
*x + e)*log(c)/f)*b + a*x
```

3.408 $\int \frac{1}{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx$

Optimal. Leaf size=83

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

Rubi [A] time = 0.131599, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}dx = \text{Subst}\left(\int \frac{1}{a+b\log\left(cd^n(e+fx)^{mn}\right)}dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^nx^{mn})}dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{mn}}}{a+bx}dx, x, \log\left(cd^n(e+fx)^{mn}\right)\right)}{fmn}, cd^{n}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

Mathematica [A] time = 0.111027, size = 83, normalized size = 1.

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{bfmn}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b*E^(a
/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)))
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n)),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\log\left(\left((fx+e)^{m}d\right)^{n}c\right)+a}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Fricas [A] time = 2.21535, size = 157, normalized size = 1.89

$$\frac{e^{\left(-\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}\,\mathrm{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}\right)}{bfmn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="fricas")
```

```
[Out] e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))*log_integral((f*x + e)*e^((b*n*log
(d) + b*log(c) + a)/(b*m*n)))/(b*f*m*n)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n)),x)
```

```
[Out] Integral(1/(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

Giac [A] time = 1.19801, size = 107, normalized size = 1.29

$$\frac{\mathrm{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bmn}\right)}}{bc^{\frac{1}{mn}}d^{\left(\frac{1}{m}\right)}fmn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n)),x, algorithm="giac")
```

```
[Out] Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))/(b*c^
(1/(m*n))*d^(1/m)*f*m*n)
```

3.409 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}\,dx$

Optimal. Leaf size=123

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{b^2fm^2n^2}-\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b^2*E^
(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(b*f*m*n
*(a + b*Log[c*(d*(e + f*x)^m)^n]))
```

Rubi [A] time = 0.167533, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{b^2fm^2n^2}-\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-2),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(b^2*E^
(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(b*f*m*n
*(a + b*Log[c*(d*(e + f*x)^m)^n]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^2}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^n x^{mn}))^2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= -\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^n x^{mn})}\,dx, x, e\right.}{bfmn}\right.$$

$$= -\frac{e+fx}{bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)} + \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right.}{}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{b^2fm^2n^2} - \frac{e}{bfmn\left(a+b\log\right.}$$

Mathematica [A] time = 0.110355, size = 163, normalized size = 1.33

$$-\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(bmne^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}}-\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx\right.\right.}{bmn}\right.\right.}{b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-2),x]
```

```
[Out] -(((e + f*x)*(b*E^(a/(b*m*n))*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n)) - ExpInte
gralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)]*(a + b*Log[c*(d*(e + f*x)^
m)^n])))/(b^2*E^(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a +
b*Log[c*(d*(e + f*x)^m)^n])))
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)\right)^{-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{fx+e}{b^2fmn\log\left(\left(\left(fx+e\right)^m\right)^n\right)+abfmn+\left(fmn\log\left(c\right)+fmn\log\left(d^n\right)\right)b^2}+\int\frac{1}{b^2mn\log\left(\left(\left(fx+e\right)^m\right)^n\right)+abmn+(mn\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(b^2*f*m*n*log(((f*x + e)^m)^n) + a*b*f*m*n + (f*m*n*log(c) + f*
m*n*log(d^n))*b^2) + integrate(1/(b^2*m*n*log(((f*x + e)^m)^n) + a*b*m*n +
(m*n*log(c) + m*n*log(d^n))*b^2), x)
```

Fricas [A] time = 2.25319, size = 425, normalized size = 3.46

$$-\frac{\left(\left(bfmnx+bemn\right)e^{\left(\frac{bn\log(d)+b\log(c)+a}{bmn}\right)}-\left(bmn\log\left(fx+e\right)+bn\log\left(d\right)+b\log\left(c\right)+a\right)\log\_integral\left(\left(fx+e\right)e^{\left(\frac{bn\log(d)+b\log}{bmn}\right.}\right.\right.}{b^3fm^3n^3\log\left(fx+e\right)+b^3fm^2n^3\log\left(d\right)+b^3fm^2n^2\log\left(c\right)+ab^2fm^2n^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="fricas")
```

```
[Out] -((b*f*m*n*x + b*e*m*n)*e^((b*n*log(d) + b*log(c) + a)/(b*m*n)) - (b*m*n*lo
g(f*x + e) + b*n*log(d) + b*log(c) + a)*log_integral((f*x + e)*e^((b*n*log(
d) + b*log(c) + a)/(b*m*n))))*e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))/(b^3
*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b
^2*f*m^2*n^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-2), x)
```

Giac [B] time = 1.24344, size = 801, normalized size = 6.51

$$-\frac{\left(fx+e\right)bmn}{b^3fm^3n^3\log\left(fx+e\right)+b^3fm^2n^3\log\left(d\right)+b^3fm^2n^2\log\left(c\right)+ab^2fm^2n^2}+\frac{bmn\mathrm{Ei}\left(\frac{\log(d)}{m}+\frac{\log(c)}{mn}+\frac{a}{bmn}+\log\right.}{\left(b^3fm^3n^3\log\left(fx+e\right)+b^3fm^2n^3\log\left(d\right)+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*m*n/(b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f
*m^2*n^2*log(c) + a*b^2*f*m^2*n^2) + b*m*n*Ei(log(d)/m + log(c)/(m*n) + a/(
b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)/((b^3*f*m^3*n^3*log(f*x
+ e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/
(m*n))*d^(1/m)) + b*n*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e)
)*e^(-a/(b*m*n))*log(d)/((b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d)
 + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m)) + b*Ei(log(
d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)/((b^3
*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b
^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m)) + a*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*
n) + log(f*x + e))*e^(-a/(b*m*n))/((b^3*f*m^3*n^3*log(f*x + e) + b^3*f*m^2*
n^3*log(d) + b^3*f*m^2*n^2*log(c) + a*b^2*f*m^2*n^2)*c^(1/(m*n))*d^(1/m))
```

3.410 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}\,dx$

Optimal. Leaf size=169

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{2b^3fm^3n^3}-\frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}-\frac{e}{2bfmn\left(a+b\log\right.}$$

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(2*b^3*
E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(2*b*f
*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n])^2) - (e + f*x)/(2*b^2*f*m^2*n^2*(a +
b*Log[c*(d*(e + f*x)^m)^n]))
```

Rubi [A] time = 0.222723, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{2b^3fm^3n^3}-\frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)}-\frac{e}{2bfmn\left(a+b\log\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)])/(2*b^3*
E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) - (e + f*x)/(2*b*f
*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n])^2) - (e + f*x)/(2*b^2*f*m^2*n^2*(a +
b*Log[c*(d*(e + f*x)^m)^n]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
```

```
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^3}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^3}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= -\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^2}\,dx \right.}{2bfmn}\right.$$

$$= -\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2} - \frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}$$

$$= -\frac{e+fx}{2bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2} - \frac{e+fx}{2b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}$$

$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)}{2b^3fm^3n^3} - \frac{e}{2bfmn\left(a+b\log\right.}$$

Mathematica [A] time = 0.180611, size = 189, normalized size = 1.12

$$-\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(bmne^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)+bmn\right)-\left(a+b\log\right.\right.}{2b^3fm^3n^3\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3),x]
```

```
[Out] -((e + f*x)*(-(ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)]*(a +
 b*Log[c*(d*(e + f*x)^m)^n])^2) + b*E^(a/(b*m*n))*m*n*(c*(d*(e + f*x)^m)^n)
^(1/(m*n))*(a + b*m*n + b*Log[c*(d*(e + f*x)^m)^n])))/(2*b^3*E^(a/(b*m*n))*
f*m^3*n^3*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a + b*Log[c*(d*(e + f*x)^m)^n])^
2)
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{-3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(emn+e\log(c)+e\log(d^n))b+ae+\left(\left(fmn+f\log(c)+f\right.\right.}{2\left(b^4fm^2n^2\log\left(\left(\left(fx+e\right)^m\right)^n\right)^2+a^2b^2fm^2n^2+2\left(fm^2n^2\log(c)+fm^2n^2\log(d^n)\right)ab^3+\left(fm^2n^2\log(c)^2+2\,fm^2n^2\log\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((e*m*n + e*log(c) + e*log(d^n))*b + a*e + ((f*m*n + f*log(c) + f*log(
d^n))*b + a*f)*x + (b*f*x + b*e)*log(((f*x + e)^m)^n))/(b^4*f*m^2*n^2*log((
(f*x + e)^m)^n)^2 + a^2*b^2*f*m^2*n^2 + 2*(f*m^2*n^2*log(c) + f*m^2*n^2*log
(d^n))*a*b^3 + (f*m^2*n^2*log(c)^2 + 2*f*m^2*n^2*log(c)*log(d^n) + f*m^2*n^
2*log(d^n)^2)*b^4 + 2*(a*b^3*f*m^2*n^2 + (f*m^2*n^2*log(c) + f*m^2*n^2*log(
d^n))*b^4)*log(((f*x + e)^m)^n)) + integrate(1/2/(b^3*m^2*n^2*log(((f*x + e
)^m)^n) + a*b^2*m^2*n^2 + (m^2*n^2*log(c) + m^2*n^2*log(d^n))*b^3), x)
```

Fricas [B] time = 2.27516, size = 1053, normalized size = 6.23

$$-\frac{\left(\left(b^2em^2n^2+abemn+\left(b^2fm^2n^2+abfmn\right)x+\left(b^2fm^2n^2x+b^2em^2n^2\right)\log\left(fx+e\right)+\left(b^2fmnx+b^2emn\right)\log(c)+\left(b^2\right.\right.\right.}{2\left(b^5fm^5n^5\log\left(fx+e\right)^2+b^5fm\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*e*m^2*n^2 + a*b*e*m*n + (b^2*f*m^2*n^2 + a*b*f*m*n)*x + (b^2*f*m
^2*n^2*x + b^2*e*m^2*n^2)*log(f*x + e) + (b^2*f*m*n*x + b^2*e*m*n)*log(c) +
 (b^2*f*m*n^2*x + b^2*e*m*n^2)*log(d))*e^((b*n*log(d) + b*log(c) + a)/(b*m*
n)) - (b^2*m^2*n^2*log(f*x + e)^2 + b^2*n^2*log(d)^2 + b^2*log(c)^2 + 2*a*b
*log(c) + a^2 + 2*(b^2*m*n^2*log(d) + b^2*m*n*log(c) + a*b*m*n)*log(f*x + e
) + 2*(b^2*n*log(c) + a*b*n)*log(d))*log_integral((f*x + e)*e^((b*n*log(d)
+ b*log(c) + a)/(b*m*n))))*e^(-(b*n*log(d) + b*log(c) + a)/(b*m*n))/(b^5*f*
m^5*n^5*log(f*x + e)^2 + b^5*f*m^3*n^5*log(d)^2 + b^5*f*m^3*n^3*log(c)^2 +
2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3 + 2*(b^5*f*m^4*n^5*log(d) + b^
5*f*m^4*n^4*log(c) + a*b^4*f*m^4*n^4)*log(f*x + e) + 2*(b^5*f*m^3*n^4*log(c
) + a*b^4*f*m^3*n^4)*log(d))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-3), x)
```

Giac [B] time = 1.40324, size = 4699, normalized size = 27.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*m^2*n^2*log(f*x + e)/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b
^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^
5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log
(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*
m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + 1/2*b^2*m^2*n^2*Ei(log(d)/m + log(c)/
(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)^2/((b^5*f*m^5
*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4
*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x +
 e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^
3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^
(1/m)) - 1/2*(f*x + e)*b^2*m^2*n^2/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*
m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m
^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*l
og(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n
^3*log(c) + a^2*b^3*f*m^3*n^3) - 1/2*(f*x + e)*b^2*m*n^2*log(d)/(b^5*f*m^5*
n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*
log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x +
e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3
*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + b^2*m*n^2*Ei(
log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x
+ e)*log(d)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*l
og(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*
b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*
log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*
m^3*n^3)*c^(1/(m*n))*d^(1/m)) - 1/2*(f*x + e)*b^2*m*n*log(c)/(b^5*f*m^5*n^5
*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log
(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e)
+ 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^
4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3) + b^2*m*n*Ei(log(d
)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(f*x + e)*
log(c)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d)
 + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f
*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c
)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n
^3)*c^(1/(m*n))*d^(1/m)) + 1/2*b^2*n^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*
```

```
n) + log(f*x + e))*e^(-a/(b*m*n))*log(d)^2/((b^5*f*m^5*n^5*log(f*x + e)^2 +
 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c)
+ b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4
*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^
4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) - 1/2*(f*x + e
)*a*b*m*n/(b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(
d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4
*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log
(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3
*n^3) + a*b*m*n*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-
a/(b*m*n))*log(f*x + e)/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*lo
g(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log
(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^
5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c)
+ a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + b^2*n*Ei(log(d)/m + log(c)/(m*n
) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)*log(d)/((b^5*f*m^5*n^5*
log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(
f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) +
 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4
*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)
) + 1/2*b^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b
*m*n))*log(c)^2/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x +
e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 +
2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*
n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^
3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + a*b*n*Ei(log(d)/m + log(c)/(m*n) + a/(b
*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(d)/((b^5*f*m^5*n^5*log(f*x + e)^2
+ 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c)
 + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^
4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b
^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m)) + a*b*Ei(log(
d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e))*e^(-a/(b*m*n))*log(c)/((b^5
*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x + e)*log(d) + 2*b^5*f*m
^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2 + 2*a*b^4*f*m^4*n^4*log
(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^3*n^3*log(c)^2 + 2*a*b^
4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*b^3*f*m^3*n^3)*c^(1/(m*
n))*d^(1/m)) + 1/2*a^2*Ei(log(d)/m + log(c)/(m*n) + a/(b*m*n) + log(f*x + e
))*e^(-a/(b*m*n))/((b^5*f*m^5*n^5*log(f*x + e)^2 + 2*b^5*f*m^4*n^5*log(f*x
+ e)*log(d) + 2*b^5*f*m^4*n^4*log(f*x + e)*log(c) + b^5*f*m^3*n^5*log(d)^2
+ 2*a*b^4*f*m^4*n^4*log(f*x + e) + 2*b^5*f*m^3*n^4*log(c)*log(d) + b^5*f*m^
3*n^3*log(c)^2 + 2*a*b^4*f*m^3*n^4*log(d) + 2*a*b^4*f*m^3*n^3*log(c) + a^2*
b^3*f*m^3*n^3)*c^(1/(m*n))*d^(1/m))
```

3.411 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}\,dx$

Optimal. Leaf size=219

$$-\frac{15\sqrt{\pi}b^{5/2}m^{5/2}n^{5/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{8f}+\frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\right.}}{4f}$$

```
[Out] (-15*b^(5/2)*m^(5/2)*n^(5/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(8*E^(a/(b*m*n))*f*(c*(d*(e + f*
x)^m)^n)^(1/(m*n))) + (15*b^2*m^2*n^2*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*
x)^m)^n]])/(4*f) - (5*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2
))/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))/f
```

Rubi [A] time = 0.3677, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$-\frac{15\sqrt{\pi}b^{5/2}m^{5/2}n^{5/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{8f}+\frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\right.}}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2),x]
```

```
[Out] (-15*b^(5/2)*m^(5/2)*n^(5/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(8*E^(a/(b*m*n))*f*(c*(d*(e + f*
x)^m)^n)^(1/(m*n))) + (15*b^2*m^2*n^2*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*
x)^m)^n]])/(4*f) - (5*b*m*n*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2
))/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
```

```
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{5/2}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^n x^{mn}\right)\right)^{5/2}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+f\right.\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}{f} - \text{Subst}\left(\frac{(5bmn)\,\text{Subst}\left(\int (a+b\log(\right.}{2f}\right.$$

$$= -\frac{5bmn(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{f}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{4f} - \frac{5bmn(e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.}{2f}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{4f} - \frac{5bmn(e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.}{2f}$$

$$= \frac{15b^2m^2n^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{4f} - \frac{5bmn(e+fx)\left(a+b\log\left(c\left(d\right.\right.\right.}{2f}$$

$$= -\frac{15b^{5/2}e^{-\frac{a}{bmn}}m^{5/2}n^{5/2}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right.}{8f}$$

Mathematica [A] time = 0.31078, size = 190, normalized size = 0.87

$$\frac{(e+fx)\left(8\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2} - 5bmn\left(3\sqrt{\pi}b^{3/2}m^{3/2}n^{3/2}e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right.}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right.\right.\right.}{8f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2),x]
```

```
[Out] ((e + f*x)*(8*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2) - 5*b*m*n*((3*b^(3/2)*
m^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]
*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n))) + 2*Sqr
t[a + b*Log[c*(d*(e + f*x)^m)^n]]*(2*a - 3*b*m*n + 2*b*Log[c*(d*(e + f*x)^m
)^n]))))/(8*f)
```

Maple [F] time = 0.6, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(5/2), x)
```

3.412 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}\,dx$

Optimal. Leaf size=176

$$\frac{3\sqrt{\pi}b^{3/2}m^{3/2}n^{3/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{4f}+\frac{(e+fx)\big(a+b\log\big(c\big(d(e+fx)^m\big)^n}{f}$$

```
[Out] (3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(4*E^(a/(b*m*n))*f*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (3*b*m*n*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2))/f
```

Rubi [A] time = 0.275895, antiderivative size = 176, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{3\sqrt{\pi}b^{3/2}m^{3/2}n^{3/2}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{4f}+\frac{(e+fx)\big(a+b\log\big(c\big(d(e+fx)^m\big)^n}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2),x]
```


```
[Out] (3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(4*E^(a/(b*m*n))*f*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (3*b*m*n*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2))/f
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
```

```
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}\,dx=\text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{3/2}\,dx,cd^n(e+fx)^{mn},c\left(d(e+fx)^m\right)^n\right)$$

$$=\text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^nx^{mn}))^{3/2}\,dx,x,e+fx\right)}{f},cd^n(e+fx)^{mn},c\left(d(e+f\right.\right.$$

$$=\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}{f}-\text{Subst}\left(\frac{(3bmn)\,\text{Subst}\left(\int\sqrt{a+b\log}\right.}{2f}\right.$$

$$=-\frac{3bmn(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{2f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}{f}$$

$$=-\frac{3bmn(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{2f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}{f}$$

$$=-\frac{3bmn(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{2f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}{f}$$

$$=\frac{3b^{3/2}e^{-\frac{a}{bmn}}m^{3/2}n^{3/2}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{4f}-$$

Mathematica [A] time = 0.0611733, size = 160, normalized size = 0.91

$$\frac{(e+fx)\left(3\sqrt{\pi}b^{3/2}m^{3/2}n^{3/2}e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)+2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\left(2a+\right.\right.}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(3/2),x]
```

```
[Out] ((e + f*x)*((3*b^(3/2)*m^(3/2)*n^(3/2)*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]*(2*a - 3*b*m*n + 2
*b*Log[c*(d*(e + f*x)^m)^n])))/(4*f)
```

Maple [F] time = 0.566, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(3/2), x)
```

3.413 $\int \sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx$

Optimal. Leaf size=139

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{m}\sqrt{n}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{2f}$$

```
[Out] -(Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(2*E^(a/(b*m*n))*f*(c*(d*(e + f*x)^
m)^n)^(1/(m*n))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])/f
```

Rubi [A] time = 0.219506, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{m}\sqrt{n}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```


```
[Out] -(Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(2*E^(a/(b*m*n))*f*(c*(d*(e + f*x)^
m)^n)^(1/(m*n))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])/f
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}\,dx = \text{Subst}\left(\int \sqrt{a+b\log\left(cd^n(e+fx)^{mn}\right)}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cd^n x^{mn}\right)}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^{\cdots}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{(bmn)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^n x^{mn})}}\,dx \cdots\right.}{2f}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{\left(b(e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Su}\cdots}{\cdots}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{f} - \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Su}\cdots}{\cdots}\right.$$

$$= -\frac{\sqrt{b}e^{-\frac{a}{bmn}}\sqrt{m}\sqrt{n}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{2f} + \frac{(e\cdots}{\cdots}$$

Mathematica [A] time = 0.062111, size = 134, normalized size = 0.96

$$\frac{(e+fx)\left(2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)} - \sqrt{\pi}\sqrt{b}\sqrt{m}\sqrt{n}e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] ((e + f*x)*(-((Sqrt[b]*Sqrt[m]*Sqrt[n]*Sqrt[Pi]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^m)^n]]/(Sqrt[b]*Sqrt[m]*Sqrt[n])])/(E^(a/(b*m*n))*(c*(d*(e + f*x)^m
)^n)^(1/(m*n)))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]))/(2*f)
```

Maple [F] time = 0.081, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

3.414 $\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}\,dx$

Optimal. Leaf size=104

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}f\sqrt{m}\sqrt{n}}$$

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

Rubi [A] time = 0.182353, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {2389, 2300, 2180, 2204, 2445}

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}f\sqrt{m}\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}\,dx = \text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^n(e+fx)^{mn}\right)}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^n x^{mn})}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{mn}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^n(e+fx)^{mn}\right)\right)}{fmn}\right.$$

$$= \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int e^{-\frac{a}{bmn}+\frac{x^2}{bmn}}\,dx, x, \sqrt{a+b\log\left(cd^n\right.}\right.}{bfmn}\right.$$

$$= \frac{e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}f\sqrt{m}\sqrt{n}}$$

Mathematica [A] time = 0.0208125, size = 104, normalized size = 1.

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{\sqrt{b}f\sqrt{m}\sqrt{n}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sqrt
[m]*Sqrt[n])])/(Sqrt[b]*E^(a/(b*m*n))*f*Sqrt[m]*Sqrt[n]*(c*(d*(e + f*x)^m)^
n)^(1/(m*n)))
```

Maple [F] time = 0.089, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^m\right)^n\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*log(c*(d*(e + f*x)**m)**n)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*log(((f*x + e)^m*d)^n*c) + a), x)
```

3.415 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}}-\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(b^(3/2)*E^(a/(b*m*n))*f*m^(3/2)*n^(3/2)*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))) - (2*(e + f*x))/(b*f*m*n*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n
]])
```

Rubi [A] time = 0.245591, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}}-\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(b^(3/2)*E^(a/(b*m*n))*f*m^(3/2)*n^(3/2)*(c*(d*(e + f*x)^m
)^n)^(1/(m*n))) - (2*(e + f*x))/(b*f*m*n*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n
]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{3/2}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^{3/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\right.}$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^nx^{mn})}}\,dx\right.}{bfmn}\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}} + \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^n(e+fx)^{mn}\right)^{-}\right.}{}\right.$$

$$= -\frac{2(e+fx)}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}} + \text{Subst}\left(\frac{\left(4(e+fx)\left(cd^n(e+fx)^{mn}\right)^{-}\right.}{}\right.$$

$$= \frac{2e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{b^{3/2}fm^{3/2}n^{3/2}} - \frac{}{bfmn\sqrt{}}$$

Mathematica [A] time = 0.214486, size = 181, normalized size = 1.23

$$-\frac{2(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(e^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}} - \sqrt{-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}}\text{Gamma}\left(\frac{1}{2}, -\frac{a+b\log\left(c\left(d(e+fx\right.\right.}{bmn}\right.\right.}{bfmn\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-3/2),x]
```

```
[Out] (-2*(e + f*x)*(E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n)) - Gamma[1/2, -
((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*Sqrt[-((a + b*Log[c*(d*(e + f*x
)^m)^n])/(b*m*n))]))/(b*E^(a/(b*m*n))*f*m*n*(c*(d*(e + f*x)^m)^n)^(1/(m*n))
*Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]])
```

Maple [F] time = 0.57, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-3/2), x)
```

3.416 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}}-\frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}-\frac{}{3bfmn}$$

```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(3*b^(5/2)*E^(a/(b*m*n))*f*m^(5/2)*n^(5/2)*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (2*(e + f*x))/(3*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*m^2*n^2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)
^n]])
```

Rubi [A] time = 0.312428, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}}-\frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}-\frac{}{3bfmn}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-5/2),x]
```

```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(3*b^(5/2)*E^(a/(b*m*n))*f*m^(5/2)*n^(5/2)*(c*(d*(e + f*x)
^m)^n)^(1/(m*n))) - (2*(e + f*x))/(3*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^n
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*m^2*n^2*Sqrt[a + b*Log[c*(d*(e + f*x)^m)
^n]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{5/2}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^n x^{mn}))^{5/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^{\right.$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{(a+b\log(cd^n x^{mn})}\right.}{3bfmn}\right.$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}$$

$$= -\frac{2(e+fx)}{3bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fm^2n^2\sqrt{a+b\log\left(c\left(d(e+f\right.\right.}}$$

$$= \frac{4e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{3b^{5/2}fm^{5/2}n^{5/2}} - \frac{}{3bfmn}$$

Mathematica [A] time = 0.314805, size = 211, normalized size = 1.09

$$-\frac{2(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(2bmn\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)+e^{\frac{a}{bmn}}\left(c\left(d(e+\right.\right.}{3b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*b*m*n*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n
))]*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^(3/2) + E^(a/(b*m*n))*(c*
(d*(e + f*x)^m)^n)^(1/(m*n))*(2*a + b*m*n + 2*b*Log[c*(d*(e + f*x)^m)^n])))
/(3*b^2*E^(a/(b*m*n))*f*m^2*n^2*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(a + b*Log[
c*(d*(e + f*x)^m)^n])^(3/2))
```

Maple [F] time = 0.549, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^m d\right)^n c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-5/2), x)
```

3.417 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{7/2}}\,dx$

Optimal. Leaf size=237

$$\frac{8\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}}-\frac{8(e+fx)}{15b^3fm^3n^3\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}-\frac{}{15b^2f\ldots}$$

```
[Out] (8*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(15*b^(7/2)*E^(a/(b*m*n))*f*m^(7/2)*n^(7/2)*(c*(d*(e + f*x
)^m)^n)^(1/(m*n))) - (2*(e + f*x))/(5*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^
n])^(5/2)) - (4*(e + f*x))/(15*b^2*f*m^2*n^2*(a + b*Log[c*(d*(e + f*x)^m)^n
])^(3/2)) - (8*(e + f*x))/(15*b^3*f*m^3*n^3*Sqrt[a + b*Log[c*(d*(e + f*x)^m
)^n]])
```

Rubi [A] time = 0.384623, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{8\sqrt{\pi}(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}}-\frac{8(e+fx)}{15b^3fm^3n^3\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}-\frac{}{15b^2f\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-7/2),x]
```

```
[Out] (8*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^m)^n]]/(Sqrt[b]*Sq
rt[m]*Sqrt[n])])/(15*b^(7/2)*E^(a/(b*m*n))*f*m^(7/2)*n^(7/2)*(c*(d*(e + f*x
)^m)^n)^(1/(m*n))) - (2*(e + f*x))/(5*b*f*m*n*(a + b*Log[c*(d*(e + f*x)^m)^
n])^(5/2)) - (4*(e + f*x))/(15*b^2*f*m^2*n^2*(a + b*Log[c*(d*(e + f*x)^m)^n
])^(3/2)) - (8*(e + f*x))/(15*b^3*f*m^3*n^3*Sqrt[a + b*Log[c*(d*(e + f*x)^m
)^n]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
```

```
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{7/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^{7/2}}\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^{7/2}}\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right.$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{(a+b\log(cd^nx^{mn}))^{5/2}}\right.}{5bfmn}\right.$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx)}{15b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx)}{15b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx)}{15b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}$$

$$= -\frac{2(e+fx)}{5bfmn\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^{5/2}} - \frac{4(e+fx)}{15b^2fm^2n^2\left(a+b\log\left(c\left(d(e+fx)^m\right.\right.\right.}$$

$$= \frac{8e^{-\frac{a}{bmn}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}}{\sqrt{b}\sqrt{m}\sqrt{n}}\right)}{15b^{7/2}fm^{7/2}n^{7/2}} - \frac{}{5bfmn\left(a\right.}$$

Mathematica [A] time = 0.420498, size = 272, normalized size = 1.15

$$-\frac{2(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(e^{\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{\frac{1}{mn}}\left(4a^2+2b(4a+bmn)\log\left(c\left(d(e+fx)^m\right)^n\right)+2abmn+4\right.\right.}{15b^3fm^3n^3\left(a+\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^(-7/2),x]
```

```
[Out] (-2*(e + f*x)*(-4*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(
a + b*Log[c*(d*(e + f*x)^m)^n])^2*Sqrt[-((a + b*Log[c*(d*(e + f*x)^m)^n])/(
b*m*n))] + E^(a/(b*m*n))*(c*(d*(e + f*x)^m)^n)^(1/(m*n))*(4*a^2 + 2*a*b*m*n
 + 3*b^2*m^2*n^2 + 2*b*(4*a + b*m*n)*Log[c*(d*(e + f*x)^m)^n] + 4*b^2*Log[c
*(d*(e + f*x)^m)^n]^2)))/(15*b^3*E^(a/(b*m*n))*f*m^3*n^3*(c*(d*(e + f*x)^m)
^n)^(1/(m*n))*(a + b*Log[c*(d*(e + f*x)^m)^n])^(5/2))
```

Maple [F] time = 0.554, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{m}\right)^{n}\right)\right)^{-\frac{7}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(7/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^m)^n))^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-7/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**m)**n))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^m)^n))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^(-7/2), x)
```

3.418 $\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\,dx$

Optimal. Leaf size=131

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log\left(c\left(\ldots\right.\right.}{b\ldots}\right.}{f}$$

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

Rubi [A] time = 0.14695, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2300, 2181, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log\left(c\left(\ldots\right.\right.}{b\ldots}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^m)^n])^p,x]
```

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^n(e+fx)^{mn}\right)\right)^p\,dx, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right)^n\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^n x^{mn}))^p\,dx, x, e+fx\right)}{f}, cd^n(e+fx)^{mn}, c\left(d(e+fx)^m\right.\right.$$
$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^n(e+fx)^{mn}\right)^{-\frac{1}{mn}}\right)\text{Subst}\left(\int e^{\frac{x}{mn}}(a+bx)^p\,dx, x, \log\left(cd^n(e+f\right.\right.}{fmn}\right.$$
$$= \frac{e^{-\frac{a}{bmn}}(e+fx)\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\Gamma\left(1+p,-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)\left(a+b\log\left(c\left(d\right.\right.\right.}{f}$$

Mathematica [A] time = 0.163161, size = 131, normalized size = 1.

$$\frac{(e+fx)e^{-\frac{a}{bmn}}\left(c\left(d(e+fx)^m\right)^n\right)^{-\frac{1}{mn}}\left(a+b\log\left(c\left(d(e+fx)^m\right)^n\right)\right)^p\left(-\frac{a+b\log\left(c\left(d(e+fx)^m\right)^n\right)}{bmn}\right)^{-p}\text{Gamma}\left(p+1,-\frac{a+b\log\left(c\left(d(e+\right.\right.}{bmn}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^m)^n])^p,x]
```

```
[Out] ((e + f*x)*Gamma[1 + p, -((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n))]*(a + b
*Log[c*(d*(e + f*x)^m)^n])^p)/(E^(a/(b*m*n))*f*(c*(d*(e + f*x)^m)^n)^(1/(m*
n))*(-((a + b*Log[c*(d*(e + f*x)^m)^n])/(b*m*n)))^p)
```

Maple [F] time = 0.145, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^m\right)^n\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^m)^n))^p,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^m)^n))^p,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 2.45504, size = 192, normalized size = 1.47

$$\frac{e^{\left(-\frac{bmnp\log\left(-\frac{1}{bmn}\right)+bn\log(d)+b\log(c)+a}{bmn}\right)}\Gamma\left(p+1,-\frac{bmn\log\left(fx+e\right)+bn\log(d)+b\log(c)+a}{bmn}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="fricas")
```

```
[Out] e^(-(b*m*n*p*log(-1/(b*m*n)) + b*n*log(d) + b*log(c) + a)/(b*m*n))*gamma(p
+ 1, -(b*m*n*log(f*x + e) + b*n*log(d) + b*log(c) + a)/(b*m*n))/f
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\log\left(c\left(d\left(e+fx\right)^{m}\right)^{n}\right)\right)^{p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**m)**n))**p,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**m)**n))**p, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{m}d\right)^{n}c\right)+a\right)^{p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^m)^n))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^m*d)^n*c) + a)^p, x)
```

3.419 $\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\,dx$

Optimal. Leaf size=109

$$\frac{4^{-p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(4^p*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt[d*S
qrt[e + f*x]]])/b))^p)
```

Rubi [A] time = 0.138649, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2299, 2181, 2445}

$$\frac{4^{-p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]])^p,x]
```

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(4^p*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt[d*S
qrt[e + f*x]]])/b))^p)
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2299

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[1/(n*c^(1
/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b,
 c, p}, x] && IntegerQ[1/n]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
```

```
c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\,dx = \text{Subst}\left(\int \left(a+b\log\left(c\sqrt{d}\sqrt[4]{e+fx}\right)\right)^p\,dx, c\sqrt{d}\sqrt[4]{e+fx}, c\sqrt{d\sqrt{e+fx}}\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(c\sqrt{d}\sqrt[4]{x}\right)\right)^p\,dx, x, e+fx\right)}{f}, c\sqrt{d}\sqrt[4]{e+fx}, c\sqrt{d\sqrt{e+f}}\right.$$
$$= \text{Subst}\left(\frac{4\,\text{Subst}\left(\int e^{4x}(a+bx)^p\,dx, x, \log\left(c\sqrt{d}\sqrt[4]{e+fx}\right)\right)}{c^4d^2f}, c\sqrt{d}\sqrt[4]{e+fx}, c\sqrt{d\sqrt{e+}}\right.$$
$$= \frac{4^{-p}e^{-\frac{4a}{b}}\Gamma\left(1+p,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{}}\right.}{b}\right.}{c^4d^2f}$$

Mathematica [A] time = 0.10862, size = 109, normalized size = 1.

$$\frac{2^{-2p}e^{-\frac{4a}{b}}\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^p\left(-\frac{a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)}{b}\right)^{-p}\text{Gamma}\left(p+1,-\frac{4\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)}{b}\right)}{c^4d^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]])^p,x]
```

```
[Out] (Gamma[1 + p, (-4*(a + b*Log[c*Sqrt[d*Sqrt[e + f*x]]]))/b]*(a + b*Log[c*Sqr
t[d*Sqrt[e + f*x]]])^p)/(2^(2*p)*c^4*d^2*E^((4*a)/b)*f*(-((a + b*Log[c*Sqrt
[d*Sqrt[e + f*x]]])/b))^p)
```

Maple [F] time = 0.426, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\sqrt{d\sqrt{fx+e}}\right)\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x)
```

Maxima [A] time = 1.31926, size = 95, normalized size = 0.87

$$-\frac{4\left(b\log\left(\sqrt{\sqrt{fx+e}dc}\right)+a\right)^{p+1}e^{\left(-\frac{4a}{b}\right)}E_{-p}\left(-\frac{4\left(b\log\left(\sqrt{\sqrt{fx+e}dc}\right)+a\right)}{b}\right)}{bc^4d^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="maxima")
```

```
[Out] -4*(b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^(p + 1)*e^(-4*a/b)*exp_integral_e(-
p, -4*(b*log(sqrt(sqrt(f*x + e)*d)*c) + a)/b)/(b*c^4*d^2*f)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b\log\left(\sqrt{\sqrt{fx+e}dc}\right)+a\right)^{p},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="fricas")
```

```
[Out] integral((b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^p, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(a+b\log\left(c\sqrt{d\sqrt{e+fx}}\right)\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**(1/2))**(1/2)))**p,x)
```

```
[Out] Integral((a + b*log(c*sqrt(d*sqrt(e + f*x))))**p, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\left(b\log\left(\sqrt{\sqrt{fx+e}dc}\right)+a\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^(1/2))^(1/2)))^p,x, algorithm="giac")
```

```
[Out] integrate((b*log(sqrt(sqrt(f*x + e)*d)*c) + a)^p, x)
```

3.420 $\int (g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx$

Optimal. Leaf size=158

$$\frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h}-\frac{bpqx(fg-eh)^3}{4f^3}-\frac{bpq(g+hx)^2(fg-eh)^2}{8f^2h}-\frac{bpq(fg-eh)^4\log(e+fx)}{4f^4h}-bpq$$

```
[Out] -(b*(f*g - e*h)^3*p*q*x)/(4*f^3) - (b*(f*g - e*h)^2*p*q*(g + h*x)^2)/(8*f^2
*h) - (b*(f*g - e*h)*p*q*(g + h*x)^3)/(12*f*h) - (b*p*q*(g + h*x)^4)/(16*h)
 - (b*(f*g - e*h)^4*p*q*Log[e + f*x])/(4*f^4*h) + ((g + h*x)^4*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(4*h)
```

Rubi [A] time = 0.163642, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 43, 2445}

$$\frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h}-\frac{bpqx(fg-eh)^3}{4f^3}-\frac{bpq(g+hx)^2(fg-eh)^2}{8f^2h}-\frac{bpq(fg-eh)^4\log(e+fx)}{4f^4h}-bpq$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```


```
[Out] -(b*(f*g - e*h)^3*p*q*x)/(4*f^3) - (b*(f*g - e*h)^2*p*q*(g + h*x)^2)/(8*f^2
*h) - (b*(f*g - e*h)*p*q*(g + h*x)^3)/(12*f*h) - (b*p*q*(g + h*x)^4)/(16*h)
 - (b*(f*g - e*h)^4*p*q*Log[e + f*x])/(4*f^4*h) + ((g + h*x)^4*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(4*h)
```


Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$

$$= \frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^4}{e+fx}dx}{4h}, cd^q(e\right.$$

$$= \frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4h} - \text{Subst}\left(\frac{(bfpq)\int\left(\frac{h(fg-eh)^3}{f^4}+\frac{(fg-}{f^4(e}\right.}{}\right.$$

$$= -\frac{b(fg-eh)^3pqx}{4f^3} - \frac{b(fg-eh)^2pq(g+hx)^2}{8f^2h} - \frac{b(fg-eh)pq(g+hx)^3}{12fh} - \frac{bpq}{}$$

Mathematica [A] time = 0.291921, size = 232, normalized size = 1.47

$$\frac{fx\left(12af^3\left(6g^2hx+4g^3+4gh^2x^2+h^3x^3\right)-bpq\left(6e^2fh^2(8g+hx)-12e^3h^3-4ef^2h\left(18g^2+6ghx+h^2x^2\right)+f^3\left(36g^2hx\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (f*x*(12*a*f^3*(4*g^3 + 6*g^2*h*x + 4*g*h^2*x^2 + h^3*x^3) - b*p*q*(-12*e^3
*h^3 + 6*e^2*f*h^2*(8*g + h*x) - 4*e*f^2*h*(18*g^2 + 6*g*h*x + h^2*x^2) + f
^3*(48*g^3 + 36*g^2*h*x + 16*g*h^2*x^2 + 3*h^3*x^3))) - 12*b*e^2*h*(6*f^2*g
^2 - 4*e*f*g*h + e^2*h^2)*p*q*Log[e + f*x] + 12*b*f^3*(4*e*g^3 + f*x*(4*g^3
 + 6*g^2*h*x + 4*g*h^2*x^2 + h^3*x^3))*Log[c*(d*(e + f*x)^p)^q])/(48*f^4)
```

Maple [F] time = 0.662, size = 0, normalized size = 0.

$$\int (hx+g)^3\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [B] time = 1.12445, size = 410, normalized size = 2.59

$$\frac{1}{4}bh^3x^4\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\frac{1}{4}ah^3x^4-bfg^3pq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)-\frac{1}{48}bfh^3pq\left(\frac{12e^4\log\left(fx+e\right)}{f^5}+\frac{3f^3x^4-4ef^2x}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] 1/4*b*h^3*x^4*log(((f*x + e)^p*d)^q*c) + 1/4*a*h^3*x^4 - b*f*g^3*p*q*(x/f -
 e*log(f*x + e)/f^2) - 1/48*b*f*h^3*p*q*(12*e^4*log(f*x + e)/f^5 + (3*f^3*x
```

```
^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*e^3*x)/f^4) + 1/6*b*f*g*h^2*p*q*(6*e^3*
log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3) - 3/4*b*f*g^2*h*p
*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2) + b*g*h^2*x^3*log(((f*x +
 e)^p*d)^q*c) + a*g*h^2*x^3 + 3/2*b*g^2*h*x^2*log(((f*x + e)^p*d)^q*c) + 3/
2*a*g^2*h*x^2 + b*g^3*x*log(((f*x + e)^p*d)^q*c) + a*g^3*x
```

Fricas [B] time = 2.08039, size = 861, normalized size = 5.45

$$-\frac{3\left(bf^4h^3pq-4\,af^4h^3\right)x^4-4\left(12\,af^4gh^2-\left(4\,bf^4gh^2-bef^3h^3\right)pq\right)x^3-6\left(12\,af^4g^2h-\left(6\,bf^4g^2h-4\,bef^3gh^2+be^2f^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/48*(3*(b*f^4*h^3*p*q - 4*a*f^4*h^3)*x^4 - 4*(12*a*f^4*g*h^2 - (4*b*f^4*g
*h^2 - b*e*f^3*h^3)*p*q)*x^3 - 6*(12*a*f^4*g^2*h - (6*b*f^4*g^2*h - 4*b*e*f
^3*g*h^2 + b*e^2*f^2*h^3)*p*q)*x^2 - 12*(4*a*f^4*g^3 - (4*b*f^4*g^3 - 6*b*e
*f^3*g^2*h + 4*b*e^2*f^2*g*h^2 - b*e^3*f*h^3)*p*q)*x - 12*(b*f^4*h^3*p*q*x^
4 + 4*b*f^4*g*h^2*p*q*x^3 + 6*b*f^4*g^2*h*p*q*x^2 + 4*b*f^4*g^3*p*q*x + (4*
b*e*f^3*g^3 - 6*b*e^2*f^2*g^2*h + 4*b*e^3*f*g*h^2 - b*e^4*h^3)*p*q)*log(f*x
 + e) - 12*(b*f^4*h^3*x^4 + 4*b*f^4*g*h^2*x^3 + 6*b*f^4*g^2*h*x^2 + 4*b*f^4
*g^3*x)*log(c) - 12*(b*f^4*h^3*q*x^4 + 4*b*f^4*g*h^2*q*x^3 + 6*b*f^4*g^2*h*
q*x^2 + 4*b*f^4*g^3*q*x)*log(d))/f^4
```

Sympy [A] time = 24.7956, size = 546, normalized size = 3.46

$$\begin{cases} ag^3x+\frac{3ag^2hx^2}{2}+agh^2x^3+\frac{ah^3x^4}{4}-\frac{be^4h^3pq\log\left(e+fx\right)}{4f^4}+\frac{be^3gh^2pq\log\left(e+fx\right)}{f^3}+\frac{be^3h^3pqx}{4f^3}-\frac{3be^2g^2hpq\log\left(e+fx\right)}{2f^2}-\frac{be^2gh^2pqx}{f^2}-\frac{be^2h^3p}{8f^2} \\ \left(a+b\log\left(c\left(de^p\right)^q\right)\right)\left(g^3x+\frac{3g^2hx^2}{2}+gh^2x^3+\frac{h^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g**3*x + 3*a*g**2*h*x**2/2 + a*g*h**2*x**3 + a*h**3*x**4/4 - b
*e**4*h**3*p*q*log(e + f*x)/(4*f**4) + b*e**3*g*h**2*p*q*log(e + f*x)/f**3
+ b*e**3*h**3*p*q*x/(4*f**3) - 3*b*e**2*g**2*h*p*q*log(e + f*x)/(2*f**2) -
b*e**2*g*h**2*p*q*x/f**2 - b*e**2*h**3*p*q*x**2/(8*f**2) + b*e*g**3*p*q*log
(e + f*x)/f + 3*b*e*g**2*h*p*q*x/(2*f) + b*e*g*h**2*p*q*x**2/(2*f) + b*e*h*
*3*p*q*x**3/(12*f) + b*g**3*p*q*x*log(e + f*x) - b*g**3*p*q*x + b*g**3*q*x*
log(d) + b*g**3*x*log(c) + 3*b*g**2*h*p*q*x**2*log(e + f*x)/2 - 3*b*g**2*h*
p*q*x**2/4 + 3*b*g**2*h*q*x**2*log(d)/2 + 3*b*g**2*h*x**2*log(c)/2 + b*g*h*
*2*p*q*x**3*log(e + f*x) - b*g*h**2*p*q*x**3/3 + b*g*h**2*q*x**3*log(d) + b
*g*h**2*x**3*log(c) + b*h**3*p*q*x**4*log(e + f*x)/4 - b*h**3*p*q*x**4/16 +
 b*h**3*q*x**4*log(d)/4 + b*h**3*x**4*log(c)/4, Ne(f, 0)), ((a + b*log(c*(d
*e**p)**q))*(g**3*x + 3*g**2*h*x**2/2 + g*h**2*x**3 + h**3*x**4/4), True))
```

Giac [B] time = 1.23648, size = 1413, normalized size = 8.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g^3*p*q*log(f*x + e)/f + 3/2*(f*x + e)^2*b*g^2*h*p*q*log(f*x +
e)/f^2 + (f*x + e)^3*b*g*h^2*p*q*log(f*x + e)/f^3 + 1/4*(f*x + e)^4*b*h^3*p
*q*log(f*x + e)/f^4 - 3*(f*x + e)*b*g^2*h*p*q*e*log(f*x + e)/f^2 - 3*(f*x +
 e)^2*b*g*h^2*p*q*e*log(f*x + e)/f^3 - (f*x + e)^3*b*h^3*p*q*e*log(f*x + e)
/f^4 - (f*x + e)*b*g^3*p*q/f - 3/4*(f*x + e)^2*b*g^2*h*p*q/f^2 - 1/3*(f*x +
 e)^3*b*g*h^2*p*q/f^3 - 1/16*(f*x + e)^4*b*h^3*p*q/f^4 + 3*(f*x + e)*b*g^2*
h*p*q*e/f^2 + 3/2*(f*x + e)^2*b*g*h^2*p*q*e/f^3 + 1/3*(f*x + e)^3*b*h^3*p*q
*e/f^4 + 3*(f*x + e)*b*g*h^2*p*q*e^2*log(f*x + e)/f^3 + 3/2*(f*x + e)^2*b*h
^3*p*q*e^2*log(f*x + e)/f^4 + (f*x + e)*b*g^3*q*log(d)/f + 3/2*(f*x + e)^2*
b*g^2*h*q*log(d)/f^2 + (f*x + e)^3*b*g*h^2*q*log(d)/f^3 + 1/4*(f*x + e)^4*b
*h^3*q*log(d)/f^4 - 3*(f*x + e)*b*g^2*h*q*e*log(d)/f^2 - 3*(f*x + e)^2*b*g*
h^2*q*e*log(d)/f^3 - (f*x + e)^3*b*h^3*q*e*log(d)/f^4 - 3*(f*x + e)*b*g*h^2
*p*q*e^2/f^3 - 3/4*(f*x + e)^2*b*h^3*p*q*e^2/f^4 - (f*x + e)*b*h^3*p*q*e^3*
log(f*x + e)/f^4 + (f*x + e)*b*g^3*log(c)/f + 3/2*(f*x + e)^2*b*g^2*h*log(c
)/f^2 + (f*x + e)^3*b*g*h^2*log(c)/f^3 + 1/4*(f*x + e)^4*b*h^3*log(c)/f^4 -
 3*(f*x + e)*b*g^2*h*e*log(c)/f^2 - 3*(f*x + e)^2*b*g*h^2*e*log(c)/f^3 - (f
*x + e)^3*b*h^3*e*log(c)/f^4 + 3*(f*x + e)*b*g*h^2*q*e^2*log(d)/f^3 + 3/2*(
f*x + e)^2*b*h^3*q*e^2*log(d)/f^4 + (f*x + e)*a*g^3/f + 3/2*(f*x + e)^2*a*g
^2*h/f^2 + (f*x + e)^3*a*g*h^2/f^3 + 1/4*(f*x + e)^4*a*h^3/f^4 + (f*x + e)*
b*h^3*p*q*e^3/f^4 - 3*(f*x + e)*a*g^2*h*e/f^2 - 3*(f*x + e)^2*a*g*h^2*e/f^3
 - (f*x + e)^3*a*h^3*e/f^4 + 3*(f*x + e)*b*g*h^2*e^2*log(c)/f^3 + 3/2*(f*x
+ e)^2*b*h^3*e^2*log(c)/f^4 - (f*x + e)*b*h^3*q*e^3*log(d)/f^4 + 3*(f*x + e
)*a*g*h^2*e^2/f^3 + 3/2*(f*x + e)^2*a*h^3*e^2/f^4 - (f*x + e)*b*h^3*e^3*log
(c)/f^4 - (f*x + e)*a*h^3*e^3/f^4
```

3.421 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=128

$$\frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}-\frac{bpqx(fg-eh)^2}{3f^2}-\frac{bpq(fg-eh)^3\log(e+fx)}{3f^3h}-\frac{bpq(g+hx)^2(fg-eh)}{6fh}-bpq($$

```
[Out] -(b*(f*g - e*h)^2*p*q*x)/(3*f^2) - (b*(f*g - e*h)*p*q*(g + h*x)^2)/(6*f*h)
- (b*p*q*(g + h*x)^3)/(9*h) - (b*(f*g - e*h)^3*p*q*Log[e + f*x])/(3*f^3*h)
+ ((g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*h)
```

Rubi [A] time = 0.125221, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 43, 2445}

$$\frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}-\frac{bpqx(fg-eh)^2}{3f^2}-\frac{bpq(fg-eh)^3\log(e+fx)}{3f^3h}-\frac{bpq(g+hx)^2(fg-eh)}{6fh}-bpq($$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -(b*(f*g - e*h)^2*p*q*x)/(3*f^2) - (b*(f*g - e*h)*p*q*(g + h*x)^2)/(6*f*h)
- (b*p*q*(g + h*x)^3)/(9*h) - (b*(f*g - e*h)^3*p*q*Log[e + f*x])/(3*f^3*h)
+ ((g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*h)
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right) dx, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$
$$= \frac{(g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^3}{e+fx}dx}{3h}, cd^q(e\right.$$
$$= \frac{(g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(bfpq)\int \left(\frac{h(fg-eh)^2}{f^3} + \frac{(fg-}{f^3(e}\right.}{}\right.$$
$$= -\frac{b(fg-eh)^2pqx}{3f^2} - \frac{b(fg-eh)pq(g+hx)^2}{6fh} - \frac{bpq(g+hx)^3}{9h} - \frac{b(fg-eh)^3pq}{3f}$$

Mathematica [A] time = 0.179455, size = 156, normalized size = 1.22

$$\frac{f\left(x\left(6af^2\left(3g^2+3ghx+h^2x^2\right)-bpq\left(6e^2h^2-3efh(6g+hx)+f^2\left(18g^2+9ghx+2h^2x^2\right)\right)\right)+6bf\left(3eg^2+fx\left(3g^2+3gh\right.\right.\right.}{18f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (6*b*e^2*h*(-3*f*g + e*h)*p*q*Log[e + f*x] + f*(x*(6*a*f^2*(3*g^2 + 3*g*h*x
 + h^2*x^2) - b*p*q*(6*e^2*h^2 - 3*e*f*h*(6*g + h*x) + f^2*(18*g^2 + 9*g*h*
x + 2*h^2*x^2))) + 6*b*f*(3*e*g^2 + f*x*(3*g^2 + 3*g*h*x + h^2*x^2))*Log[c*
(d*(e + f*x)^p)^q]))/(18*f^3)
```

Maple [F] time = 0.497, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^2 \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 1.20534, size = 273, normalized size = 2.13

$$-bfg^2pq\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right) + \frac{1}{18}bfh^2pq\left(\frac{6e^3\log\left(fx+e\right)}{f^4} - \frac{2f^2x^3-3efx^2+6e^2x}{f^3}\right) - \frac{1}{2}bfghpq\left(\frac{2e^2\log\left(fx+e\right)}{f^3} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] -b*f*g^2*p*q*(x/f - e*log(f*x + e)/f^2) + 1/18*b*f*h^2*p*q*(6*e^3*log(f*x +
 e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3) - 1/2*b*f*g*h*p*q*(2*e^2*l
og(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2) + 1/3*b*h^2*x^3*log(((f*x + e)^p*d)^
```

```
q*c) + 1/3*a*h^2*x^3 + b*g*h*x^2*log(((f*x + e)^p*d)^q*c) + a*g*h*x^2 + b*g
^2*x*log(((f*x + e)^p*d)^q*c) + a*g^2*x
```

Fricas [B] time = 1.91144, size = 583, normalized size = 4.55

$$-\frac{2\left(bf^3h^2pq - 3\,af^3h^2\right)x^3 - 3\left(6\,af^3gh - \left(3\,bf^3gh - bef^2h^2\right)pq\right)x^2 - 6\left(3\,af^3g^2 - \left(3\,bf^3g^2 - 3\,bef^2gh + be^2fh^2\right)pq\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/18*(2*(b*f^3*h^2*p*q - 3*a*f^3*h^2)*x^3 - 3*(6*a*f^3*g*h - (3*b*f^3*g*h
- b*e*f^2*h^2)*p*q)*x^2 - 6*(3*a*f^3*g^2 - (3*b*f^3*g^2 - 3*b*e*f^2*g*h + b
*e^2*f*h^2)*p*q)*x - 6*(b*f^3*h^2*p*q*x^3 + 3*b*f^3*g*h*p*q*x^2 + 3*b*f^3*g
^2*p*q*x + (3*b*e*f^2*g^2 - 3*b*e^2*f*g*h + b*e^3*h^2)*p*q)*log(f*x + e) -
6*(b*f^3*h^2*x^3 + 3*b*f^3*g*h*x^2 + 3*b*f^3*g^2*x)*log(c) - 6*(b*f^3*h^2*q
*x^3 + 3*b*f^3*g*h*q*x^2 + 3*b*f^3*g^2*q*x)*log(d))/f^3
```

Sympy [A] time = 9.84703, size = 342, normalized size = 2.67

$$\begin{cases} ag^2x + aghx^2 + \frac{ah^2x^3}{3} + \frac{be^3h^2pq\log\left(e+fx\right)}{3f^3} - \frac{be^2ghpq\log\left(e+fx\right)}{f^2} - \frac{be^2h^2pqx}{3f^2} + \frac{beg^2pq\log\left(e+fx\right)}{f} + \frac{beghpqx}{f} + \frac{beh^2pqx^2}{6f} + bg^2pqx\log \\ \left(a + b\log\left(c\left(de^p\right)^q\right)\right)\left(g^2x + ghx^2 + \frac{h^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g**2*x + a*g*h*x**2 + a*h**2*x**3/3 + b*e**3*h**2*p*q*log(e +
f*x)/(3*f**3) - b*e**2*g*h*p*q*log(e + f*x)/f**2 - b*e**2*h**2*p*q*x/(3*f**
2) + b*e*g**2*p*q*log(e + f*x)/f + b*e*g*h*p*q*x/f + b*e*h**2*p*q*x**2/(6*f
) + b*g**2*p*q*x*log(e + f*x) - b*g**2*p*q*x + b*g**2*q*x*log(d) + b*g**2*x
*log(c) + b*g*h*p*q*x**2*log(e + f*x) - b*g*h*p*q*x**2/2 + b*g*h*q*x**2*log
(d) + b*g*h*x**2*log(c) + b*h**2*p*q*x**3*log(e + f*x)/3 - b*h**2*p*q*x**3/
9 + b*h**2*q*x**3*log(d)/3 + b*h**2*x**3*log(c)/3, Ne(f, 0)), ((a + b*log(c
*(d*e**p)**q))*(g**2*x + g*h*x**2 + h**2*x**3/3), True))
```

Giac [B] time = 1.19275, size = 790, normalized size = 6.17

$$\frac{\left(fx+e\right)bg^2pq\log\left(fx+e\right)}{f} + \frac{\left(fx+e\right)^2bghpq\log\left(fx+e\right)}{f^2} + \frac{\left(fx+e\right)^3bh^2pq\log\left(fx+e\right)}{3\,f^3} - \frac{2\left(fx+e\right)bghpqe\log\left(fx\right.}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g^2*p*q*log(f*x + e)/f + (f*x + e)^2*b*g*h*p*q*log(f*x + e)/f^2
 + 1/3*(f*x + e)^3*b*h^2*p*q*log(f*x + e)/f^3 - 2*(f*x + e)*b*g*h*p*q*e*log
(f*x + e)/f^2 - (f*x + e)^2*b*h^2*p*q*e*log(f*x + e)/f^3 - (f*x + e)*b*g^2*
p*q/f - 1/2*(f*x + e)^2*b*g*h*p*q/f^2 - 1/9*(f*x + e)^3*b*h^2*p*q/f^3 + 2*(
```

```
f*x + e)*b*g*h*p*q*e/f^2 + 1/2*(f*x + e)^2*b*h^2*p*q*e/f^3 + (f*x + e)*b*h^
2*p*q*e^2*log(f*x + e)/f^3 + (f*x + e)*b*g^2*q*log(d)/f + (f*x + e)^2*b*g*h
*q*log(d)/f^2 + 1/3*(f*x + e)^3*b*h^2*q*log(d)/f^3 - 2*(f*x + e)*b*g*h*q*e*
log(d)/f^2 - (f*x + e)^2*b*h^2*q*e*log(d)/f^3 - (f*x + e)*b*h^2*p*q*e^2/f^3
 + (f*x + e)*b*g^2*log(c)/f + (f*x + e)^2*b*g*h*log(c)/f^2 + 1/3*(f*x + e)^
3*b*h^2*log(c)/f^3 - 2*(f*x + e)*b*g*h*e*log(c)/f^2 - (f*x + e)^2*b*h^2*e*l
og(c)/f^3 + (f*x + e)*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a*g^2/f + (f*x + e
)^2*a*g*h/f^2 + 1/3*(f*x + e)^3*a*h^2/f^3 - 2*(f*x + e)*a*g*h*e/f^2 - (f*x
+ e)^2*a*h^2*e/f^3 + (f*x + e)*b*h^2*e^2*log(c)/f^3 + (f*x + e)*a*h^2*e^2/f
^3
```

3.422 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=98

$$\frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}-\frac{bpq(fg-eh)^2\log(e+fx)}{2f^2h}-\frac{bpqx(fg-eh)}{2f}-\frac{bpq(g+hx)^2}{4h}$$

```
[Out] -(b*(f*g - e*h)*p*q*x)/(2*f) - (b*p*q*(g + h*x)^2)/(4*h) - (b*(f*g - e*h)^2
*p*q*Log[e + f*x])/(2*f^2*h) + ((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(2*h)
```

Rubi [A] time = 0.0813518, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {2395, 43, 2445}

$$\frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}-\frac{bpq(fg-eh)^2\log(e+fx)}{2f^2h}-\frac{bpqx(fg-eh)}{2f}-\frac{bpq(g+hx)^2}{4h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] -(b*(f*g - e*h)*p*q*x)/(2*f) - (b*p*q*(g + h*x)^2)/(4*h) - (b*(f*g - e*h)^2
*p*q*Log[e + f*x])/(2*f^2*h) + ((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(2*h)
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$

$$= \frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^2}{e+fx}dx}{2h}, cd^q(e -\right.$$

$$= \frac{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h} - \text{Subst}\left(\frac{(bfpq)\int \left(\frac{h(fg-eh)}{f^2} + \frac{(fg-eh}{f^2(e+f}\right.}{2h}\right.$$

$$= -\frac{b(fg-eh)pqx}{2f} - \frac{bpq(g+hx)^2}{4h} - \frac{b(fg-eh)^2pq\log(e+fx)}{2f^2h} + \frac{(g+hx)^2\left(a\right.}{}$$

Mathematica [A] time = 0.0591751, size = 113, normalized size = 1.15

$$agx + \frac{1}{2}ahx^2 + \frac{bg(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} + \frac{1}{2}bhx^2\log\left(c\left(d(e+fx)^p\right)^q\right) - \frac{be^2hpq\log(e+fx)}{2f^2} + \frac{behpqx}{2f} - bgpqx -$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] a*g*x - b*g*p*q*x + (b*e*h*p*q*x)/(2*f) + (a*h*x^2)/2 - (b*h*p*q*x^2)/4 - (
b*e^2*h*p*q*Log[e + f*x])/(2*f^2) + (b*h*x^2*Log[c*(d*(e + f*x)^p)^q])/2 +
(b*g*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Maple [F] time = 0.278, size = 0, normalized size = 0.

$$\int (hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 1.04245, size = 151, normalized size = 1.54

$$-bfgpq\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right) - \frac{1}{4}bfhpq\left(\frac{2e^2\log\left(fx+e\right)}{f^3} + \frac{fx^2-2ex}{f^2}\right) + \frac{1}{2}bhx^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + \frac{1}{2}ahx^2 + bgx\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] -b*f*g*p*q*(x/f - e*log(f*x + e)/f^2) - 1/4*b*f*h*p*q*(2*e^2*log(f*x + e)/f
^3 + (f*x^2 - 2*e*x)/f^2) + 1/2*b*h*x^2*log(((f*x + e)^p*d)^q*c) + 1/2*a*h*
x^2 + b*g*x*log(((f*x + e)^p*d)^q*c) + a*g*x
```

Fricas [A] time = 2.11382, size = 339, normalized size = 3.46

$$-\frac{\left(bf^2hpq - 2\,af^2h\right)x^2 - 2\left(2\,af^2g - \left(2\,bf^2g - befh\right)pq\right)x - 2\left(bf^2hpqx^2 + 2\,bf^2gpqx + \left(2\,befg - be^2h\right)pq\right)\log\left(fx + e\right)}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] -1/4*((b*f^2*h*p*q - 2*a*f^2*h)*x^2 - 2*(2*a*f^2*g - (2*b*f^2*g - b*e*f*h)*
p*q)*x - 2*(b*f^2*h*p*q*x^2 + 2*b*f^2*g*p*q*x + (2*b*e*f*g - b*e^2*h)*p*q)*
log(f*x + e) - 2*(b*f^2*h*x^2 + 2*b*f^2*g*x)*log(c) - 2*(b*f^2*h*q*x^2 + 2*
b*f^2*g*q*x)*log(d))/f^2
```

Sympy [A] time = 3.47904, size = 187, normalized size = 1.91

$$\begin{cases} agx + \frac{ahx^2}{2} - \frac{be^2hpq\log\left(e+fx\right)}{2f^2} + \frac{begpq\log\left(e+fx\right)}{f} + \frac{behpqx}{2f} + bgpqx\log\left(e + fx\right) - bgpqx + bgqx\log\left(d\right) + bgx\log\left(c\right) + \frac{bhpq}{} \\ \left(a + b\log\left(c\left(de^p\right)^q\right)\right)\left(gx + \frac{hx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Piecewise((a*g*x + a*h*x**2/2 - b*e**2*h*p*q*log(e + f*x)/(2*f**2) + b*e*g*
p*q*log(e + f*x)/f + b*e*h*p*q*x/(2*f) + b*g*p*q*x*log(e + f*x) - b*g*p*q*x
 + b*g*q*x*log(d) + b*g*x*log(c) + b*h*p*q*x**2*log(e + f*x)/2 - b*h*p*q*x*
*2/4 + b*h*q*x**2*log(d)/2 + b*h*x**2*log(c)/2, Ne(f, 0)), ((a + b*log(c*(d
*e**p)**q))*(g*x + h*x**2/2), True))
```

Giac [B] time = 1.29359, size = 350, normalized size = 3.57

$$\frac{\left(fx + e\right)bgpq\log\left(fx + e\right)}{f} + \frac{\left(fx + e\right)^2bhpq\log\left(fx + e\right)}{2\,f^2} - \frac{\left(fx + e\right)bhpqe\log\left(fx + e\right)}{f^2} - \frac{\left(fx + e\right)bgpq}{f} - \frac{\left(fx + e\right)^2bh}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] (f*x + e)*b*g*p*q*log(f*x + e)/f + 1/2*(f*x + e)^2*b*h*p*q*log(f*x + e)/f^2
 - (f*x + e)*b*h*p*q*e*log(f*x + e)/f^2 - (f*x + e)*b*g*p*q/f - 1/4*(f*x +
e)^2*b*h*p*q/f^2 + (f*x + e)*b*h*p*q*e/f^2 + (f*x + e)*b*g*q*log(d)/f + 1/2
*(f*x + e)^2*b*h*q*log(d)/f^2 - (f*x + e)*b*h*q*e*log(d)/f^2 + (f*x + e)*b*
g*log(c)/f + 1/2*(f*x + e)^2*b*h*log(c)/f^2 - (f*x + e)*b*h*e*log(c)/f^2 +
(f*x + e)*a*g/f + 1/2*(f*x + e)^2*a*h/f^2 - (f*x + e)*a*h*e/f^2
```

3.423 $\int \left(a+b \log \left(c \left(d (e+f x)^p\right)^q\right)\right) \, dx$

Optimal. Leaf size=34

$$ax+\frac{b (e+f x) \log \left(c \left(d (e+f x)^p\right)^q\right)}{f}-b p q x$$

```
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rubi [A] time = 0.0294347, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {2389, 2295, 2445}

$$ax+\frac{b (e+f x) \log \left(c \left(d (e+f x)^p\right)^q\right)}{f}-b p q x$$

Antiderivative was successfully verified.

```
[In] Int[a + b*Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b \log \left(c \left(d (e+f x)^p\right)^q\right)\right) \, dx &= a x+b \int \log \left(c \left(d (e+f x)^p\right)^q\right) \, dx\\
&= a x+b \operatorname{Subst}\left(\int \log \left(c d^q (e+f x)^{p q}\right) \, dx,c d^q (e+f x)^{p q},c \left(d (e+f x)^p\right)^q\right)\\
&= a x+b \operatorname{Subst}\left(\frac{\operatorname{Subst}\left(\int \log \left(c d^q x^{p q}\right) \, dx,x,e+f x\right)}{f},c d^q (e+f x)^{p q},c \left(d (e+f x)^p\right)^q\right)\\
&= a x-b p q x+\frac{b (e+f x) \log \left(c \left(d (e+f x)^p\right)^q\right)}{f}
\end{aligned}$$

Mathematica [A] time = 0.0084686, size = 34, normalized size = 1.

$$ax+\frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-bpqx$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] a*x - b*p*q*x + (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Maple [A] time = 0.066, size = 42, normalized size = 1.2

$$ax+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)x-bpqx+\frac{bqpe\ln\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+b*ln(c*(d*(f*x+e)^p)^q),x)
```

```
[Out] a*x+b*ln(c*(d*(f*x+e)^p)^q)*x-b*p*q*x+b*q*p/f*e*ln(f*x+e)
```

Maxima [A] time = 1.06097, size = 61, normalized size = 1.79

$$-bfpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+bx\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="maxima")
```

```
[Out] -b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b*x*log(((f*x + e)^p*d)^q*c) + a*x
```

Fricas [A] time = 2.23357, size = 124, normalized size = 3.65

$$\frac{bfqx\log\left(d\right)+bfx\log\left(c\right)-\left(bfpq-af\right)x+\left(bfpqx+bepq\right)\log\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="fricas")
```

```
[Out] (b*f*q*x*log(d) + b*f*x*log(c) - (b*f*p*q - a*f)*x + (b*f*p*q*x + b*e*p*q)*
log(f*x + e))/f
```

Sympy [A] time = 0.928201, size = 58, normalized size = 1.71

$$ax+b\left(\begin{cases}\frac{epq\log\left(e+fx\right)}{f}+pqx\log\left(e+fx\right)-pqx+qx\log\left(d\right)+x\log\left(c\right) & \text{for}\: f\neq 0\\ x\log\left(c\left(de^{p}\right)^{q}\right) & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*ln(c*(d*(f*x+e)**p)**q),x)
```

```
[Out] a*x + b*Piecewise((e*p*q*log(e + f*x)/f + p*q*x*log(e + f*x) - p*q*x + q*x*
log(d) + x*log(c), Ne(f, 0)), (x*log(c*(d*e**p)**q), True))
```

Giac [A] time = 1.29779, size = 86, normalized size = 2.53

$$\left(\frac{\left(fx+e\right)pq\log\left(fx+e\right)}{f}-\frac{\left(fx+e\right)pq}{f}+\frac{\left(fx+e\right)q\log\left(d\right)}{f}+\frac{\left(fx+e\right)\log\left(c\right)}{f}\right)b+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a+b*log(c*(d*(f*x+e)^p)^q),x, algorithm="giac")
```

```
[Out] ((f*x + e)*p*q*log(f*x + e)/f - (f*x + e)*p*q/f + (f*x + e)*q*log(d)/f + (f
*x + e)*log(c)/f)*b + a*x
```

3.424 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx$

Optimal. Leaf size=68

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rubi [A] time = 0.112487, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2394, 2393, 2391, 2445}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bfpq)\int \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)}{e+fx}dx}{h}, cd^q(e+f\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{hx}{fg-eh}\right)}{x}dx, x,\right.}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

Mathematica [A] time = 0.0131297, size = 67, normalized size = 0.99

$$\frac{bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)}{h} + \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F] time = 0.729, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log\left(\left(\left(fx+e\right)^p\right)^q\right)+\log\left(c\right)+\log\left(d^q\right)}{hx+g}\,dx + \frac{a\log\left(hx+g\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima")
```

```
[Out] b*integrate((log(((f*x + e)^p)^q) + log(c) + log(d^q))/(h*x + g), x) + a*lo
g(h*x + g)/h
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

3.425 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^2}\,dx$

Optimal. Leaf size=80

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)}+\frac{bfpq\log(e+fx)}{h(fg-eh)}-\frac{bfpq\log(g+hx)}{h(fg-eh)}$$

```
[Out] (b*f*p*q*Log[e + f*x])/(h*(f*g - e*h)) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(
h*(g + h*x)) - (b*f*p*q*Log[g + h*x])/(h*(f*g - e*h))
```

Rubi [A] time = 0.0762221, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2395, 36, 31, 2445}

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)}+\frac{bfpq\log(e+fx)}{h(fg-eh)}-\frac{bfpq\log(g+hx)}{h(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^2,x]
```

```
[Out] (b*f*p*q*Log[e + f*x])/(h*(f*g - e*h)) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(
h*(g + h*x)) - (b*f*p*q*Log[g + h*x])/(h*(f*g - e*h))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)}\,dx}{h}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)} - \text{Subst}\left(\frac{(bfpq)\int \frac{1}{g+hx}\,dx}{fg-eh}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= \frac{bfpq\log(e+fx)}{h(fg-eh)} - \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{h(g+hx)} - \frac{bfpq\log(g+hx)}{h(fg-eh)}$$

Mathematica [A] time = 0.103232, size = 69, normalized size = 0.86

$$\frac{-\frac{a}{g+hx} - \frac{b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx} + \frac{bfpq(\log(e+fx)-\log(g+hx))}{fg-eh}}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^2,x]
```

```
[Out] (-(a/(g + h*x)) - (b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x) + (b*f*p*q*(Log[e
+ f*x] - Log[g + h*x]))/(f*g - e*h))/h
```

Maple [F] time = 0.665, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x)
```

Maxima [A] time = 1.0547, size = 122, normalized size = 1.52

$$bfpq\left(\frac{\log\left(fx+e\right)}{fgh-eh^2} - \frac{\log\left(hx+g\right)}{fgh-eh^2}\right) - \frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)}{h^2x+gh} - \frac{a}{h^2x+gh}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2)) - b*l
og(((f*x + e)^p*d)^q*c)/(h^2*x + g*h) - a/(h^2*x + g*h)
```

Fricas [A] time = 2.31719, size = 262, normalized size = 3.28

$$-\frac{afg - aeh + \left(bfg - beh\right)q\log\left(d\right) - \left(bfhpqx + behpq\right)\log\left(fx + e\right) + \left(bfhpqx + bfgpq\right)\log\left(hx + g\right) + \left(bfg - beh\right)\log}{fg^{2}h - egh^{2} + \left(fgh^{2} - eh^{3}\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] -(a*f*g - a*e*h + (b*f*g - b*e*h)*q*log(d) - (b*f*h*p*q*x + b*e*h*p*q)*log(
f*x + e) + (b*f*h*p*q*x + b*f*g*p*q)*log(h*x + g) + (b*f*g - b*e*h)*log(c))
/(f*g^2*h - e*g*h^2 + (f*g*h^2 - e*h^3)*x)
```

Sympy [A] time = 12.1688, size = 1583, normalized size = 19.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**2,x)
```

```
[Out] Piecewise((-2*a*g/(2*g**2*h + 2*g*h**2*x) - b*g*p*q*log(g/h + x)/(2*g**2*h
+ 2*g*h**2*x) - b*g*p*q*log(-f*g/h + f*x)/(2*g**2*h + 2*g*h**2*x) - b*g*q*l
og(d)/(2*g**2*h + 2*g*h**2*x) - b*g*log(c)/(2*g**2*h + 2*g*h**2*x) - b*h*p*
q*x*log(g/h + x)/(2*g**2*h + 2*g*h**2*x) + b*h*p*q*x*log(-f*g/h + f*x)/(2*g
**2*h + 2*g*h**2*x) + b*h*q*x*log(d)/(2*g**2*h + 2*g*h**2*x) + b*h*x*log(c)
/(2*g**2*h + 2*g*h**2*x), Eq(e, -f*g/h)), (-2*a*g/(3*g**2*h + 3*g*h**2*x) +
 a*h*x/(3*g**2*h + 3*g*h**2*x) - 3*b*g*p*q*log(f*g/h + f*x)/(3*g**2*h + 3*g
*h**2*x) - 2*b*g*p*q/(3*g**2*h + 3*g*h**2*x) - 3*b*g*q*log(d)/(3*g**2*h + 3
*g*h**2*x) - 3*b*g*log(c)/(3*g**2*h + 3*g*h**2*x) + b*h*p*q*x/(3*g**2*h + 3
*g*h**2*x), Eq(e, f*g/h)), (zoo*(a*x + b*e*p*q*log(e + f*x)/f + b*p*q*x*log
(e + f*x) - b*p*q*x + b*q*x*log(d) + b*x*log(c)), Eq(g, -h*x)), ((a*x + b*e
*p*q*log(e + f*x)/f + b*p*q*x*log(e + f*x) - b*p*q*x + b*q*x*log(d) + b*x*l
og(c))/g**2, Eq(h, 0)), (-a*e**2*h**2/(e**2*g*h**3 + e**2*h**4*x - f**2*g**
3*h - f**2*g**2*h**2*x) + a*e*f*g*h/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*
h - f**2*g**2*h**2*x) + a*e*f*h**2*x/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3
*h - f**2*g**2*h**2*x) - a*f**2*g*h*x/(e**2*g*h**3 + e**2*h**4*x - f**2*g**
3*h - f**2*g**2*h**2*x) - b*e**2*h**2*p*q*log(e + f*x)/(e**2*g*h**3 + e**2*
h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*e**2*h**2*q*log(d)/(e**2*g*h**
3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*e**2*h**2*log(c)/(e**
2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*e*f*g*h*p*q*lo
g(e + f*x)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) + b
*e*f*g*h*p*q*log(g/h + x)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g
**2*h**2*x) - b*e*f*g*h*q*log(d)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h -
 f**2*g**2*h**2*x) - b*e*f*g*h*log(c)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**
3*h - f**2*g**2*h**2*x) - b*e*f*h**2*p*q*x*log(e + f*x)/(e**2*g*h**3 + e**2
*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) + b*e*f*h**2*p*q*x*log(g/h + x)/(
e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*e*f*h**2*q*
x*log(d)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*e
*f*h**2*x*log(c)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*
x) + b*f**2*g**2*p*q*log(g/h + x)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h
- f**2*g**2*h**2*x) - b*f**2*g*h*p*q*x*log(e + f*x)/(e**2*g*h**3 + e**2*h**
4*x - f**2*g**3*h - f**2*g**2*h**2*x) + b*f**2*g*h*p*q*x*log(g/h + x)/(e**2
*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*f**2*g*h*q*x*lo
```

```
g(d)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x) - b*f**2*
g*h*x*log(c)/(e**2*g*h**3 + e**2*h**4*x - f**2*g**3*h - f**2*g**2*h**2*x),
True))
```

Giac [A] time = 1.29982, size = 174, normalized size = 2.17

$$\frac{bfhpqx\log\left(fx+e\right)-bfhpqx\log\left(hx+g\right)+bhpqe\log\left(fx+e\right)-bfgpq\log\left(hx+g\right)-bfgq\log\left(d\right)+bhqe\log\left(d\right)-\ldots}{fgh^2x-h^3xe+fg^2h-gh^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] (b*f*h*p*q*x*log(f*x + e) - b*f*h*p*q*x*log(h*x + g) + b*h*p*q*e*log(f*x +
e) - b*f*g*p*q*log(h*x + g) - b*f*g*q*log(d) + b*h*q*e*log(d) - b*f*g*log(c
) + b*h*e*log(c) - a*f*g + a*h*e)/(f*g*h^2*x - h^3*x*e + f*g^2*h - g*h^2*e)
```

3.426 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^3}\,dx$

Optimal. Leaf size=119

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{bf^2pq\log(g+hx)}{2h(fg-eh)^2}+\frac{bfpq}{2h(g+hx)(fg-eh)}$$

```
[Out] (b*f*p*q)/(2*h*(f*g - e*h)*(g + h*x)) + (b*f^2*p*q*Log[e + f*x])/(2*h*(f*g
- e*h)^2) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*h*(g + h*x)^2) - (b*f^2*p*q
*Log[g + h*x])/(2*h*(f*g - e*h)^2)
```

Rubi [A] time = 0.129398, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 44, 2445}

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2}+\frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2}-\frac{bf^2pq\log(g+hx)}{2h(fg-eh)^2}+\frac{bfpq}{2h(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^3,x]
```

```
[Out] (b*f*p*q)/(2*h*(f*g - e*h)*(g + h*x)) + (b*f^2*p*q*Log[e + f*x])/(2*h*(f*g
- e*h)^2) - (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*h*(g + h*x)^2) - (b*f^2*p*q
*Log[g + h*x])/(2*h*(f*g - e*h)^2)
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)^2}\,dx}{2h}, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int\left(\frac{f^2}{(fg-eh)^2(e+fx)} - \frac{h}{(fg-eh)(g+hx)^2} - \frac{}{(fg}\right.}{2h}\right.$$

$$= \frac{bfpq}{2h(fg-eh)(g+hx)} + \frac{bf^2pq\log(e+fx)}{2h(fg-eh)^2} - \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2h(g+hx)^2} - \frac{bf^2pq\,\text{lo}}{2h(fg}$$

Mathematica [A] time = 0.147197, size = 88, normalized size = 0.74

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right) - \frac{bfpq(g+hx)(f(g+hx)\log(e+fx)-eh-f(g+hx)\log(g+hx)+fg)}{(fg-eh)^2}}{2h(g+hx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^3,x]
```

```
[Out] -(a + b*Log[c*(d*(e + f*x)^p)^q] - (b*f*p*q*(g + h*x)*(f*g - e*h + f*(g + h
*x)*Log[e + f*x] - f*(g + h*x)*Log[g + h*x]))/(f*g - e*h)^2)/(2*h*(g + h*x)
^2)
```

Maple [F] time = 0.664, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{\left(hx+g\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x)
```

Maxima [A] time = 1.06033, size = 232, normalized size = 1.95

$$\frac{1}{2}bfpq\left(\frac{f\log\left(fx+e\right)}{f^2g^2h-2efgh^2+e^2h^3} - \frac{f\log\left(hx+g\right)}{f^2g^2h-2efgh^2+e^2h^3} + \frac{1}{fg^2h-egh^2+\left(fgh^2-eh^3\right)x}\right) - \frac{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)}{2\left(h^3x^2+2gh^2x+g^2h\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] 1/2*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) - f*log(h*x
 + g)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) + 1/(f*g^2*h - e*g*h^2 + (f*g*h^2
 - e*h^3)*x)) - 1/2*b*log(((f*x + e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h
) - 1/2*a/(h^3*x^2 + 2*g*h^2*x + g^2*h)
```

Fricas [B] time = 2.23678, size = 667, normalized size = 5.61

$$-\frac{af^2g^2 - 2\,aefgh + ae^2h^2 - \left(bf^2gh - befh^2\right)pqx - \left(bf^2g^2 - befgh\right)pq + \left(bf^2g^2 - 2\,befgh + be^2h^2\right)q\log\left(d\right) - \left(bf^2h^2pqx\right.}{2\left(f^2g^4h - 2\,efg^3h^2 + e^2g^2h^3 + \left(f^2g\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(a*f^2*g^2 - 2*a*e*f*g*h + a*e^2*h^2 - (b*f^2*g*h - b*e*f*h^2)*p*q*x -
 (b*f^2*g^2 - b*e*f*g*h)*p*q + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*q*log(
d) - (b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + (2*b*e*f*g*h - b*e^2*h^2)*p*q
)*log(f*x + e) + (b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*p*q)*lo
g(h*x + g) + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))/(f^2*g^4*h - 2*e
*f*g^3*h^2 + e^2*g^2*h^3 + (f^2*g^2*h^3 - 2*e*f*g*h^4 + e^2*h^5)*x^2 + 2*(f
^2*g^3*h^2 - 2*e*f*g^2*h^3 + e^2*g*h^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**3,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.1509, size = 485, normalized size = 4.08

$$\frac{bf^2h^2pqx^2\log\left(fx+e\right) - bf^2h^2pqx^2\log\left(hx+g\right) + 2\,bf^2ghpqx\log\left(fx+e\right) - 2\,bf^2ghpqx\log\left(hx+g\right) + bf^2ghpqx - bfh}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*f^2*h^2*p*q*x^2*log(f*x + e) - b*f^2*h^2*p*q*x^2*log(h*x + g) + 2*b*
f^2*g*h*p*q*x*log(f*x + e) - 2*b*f^2*g*h*p*q*x*log(h*x + g) + b*f^2*g*h*p*q
*x - b*f*h^2*p*q*x*e + 2*b*f*g*h*p*q*e*log(f*x + e) - b*f^2*g^2*p*q*log(h*x
 + g) + b*f^2*g^2*p*q - b*f*g*h*p*q*e - b*h^2*p*q*e^2*log(f*x + e) - b*f^2*
g^2*q*log(d) + 2*b*f*g*h*q*e*log(d) - b*f^2*g^2*log(c) + 2*b*f*g*h*e*log(c)
 - b*h^2*q*e^2*log(d) - a*f^2*g^2 + 2*a*f*g*h*e - b*h^2*e^2*log(c) - a*h^2*
e^2)/(f^2*g^2*h^3*x^2 - 2*f*g*h^4*x^2*e + 2*f^2*g^3*h^2*x + h^5*x^2*e^2 - 4
*f*g^2*h^3*x*e + f^2*g^4*h + 2*g*h^4*x*e^2 - 2*f*g^3*h^2*e + g^2*h^3*e^2)
```

3.427 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^4}\,dx$

Optimal. Leaf size=149

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3}+\frac{bf^2pq}{3h(g+hx)(fg-eh)^2}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\frac{bf^3pq\log(g+hx)}{3h(fg-eh)^3}+\frac{bfpq}{6h(g+hx)^2(fg-eh}$$

```
[Out] (b*f*p*q)/(6*h*(f*g - e*h)*(g + h*x)^2) + (b*f^2*p*q)/(3*h*(f*g - e*h)^2*(g
 + h*x)) + (b*f^3*p*q*Log[e + f*x])/(3*h*(f*g - e*h)^3) - (a + b*Log[c*(d*(
e + f*x)^p)^q])/(3*h*(g + h*x)^3) - (b*f^3*p*q*Log[g + h*x])/(3*h*(f*g - e*
h)^3)
```

Rubi [A] time = 0.166919, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 44, 2445}

$$-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3}+\frac{bf^2pq}{3h(g+hx)(fg-eh)^2}+\frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3}-\frac{bf^3pq\log(g+hx)}{3h(fg-eh)^3}+\frac{bfpq}{6h(g+hx)^2(fg-eh}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^4,x]
```

```
[Out] (b*f*p*q)/(6*h*(f*g - e*h)*(g + h*x)^2) + (b*f^2*p*q)/(3*h*(f*g - e*h)^2*(g
 + h*x)) + (b*f^3*p*q*Log[e + f*x])/(3*h*(f*g - e*h)^3) - (a + b*Log[c*(d*(
e + f*x)^p)^q])/(3*h*(g + h*x)^3) - (b*f^3*p*q*Log[g + h*x])/(3*h*(f*g - e*
h)^3)
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^4}dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^4}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3} + \text{Subst}\left(\frac{(bfpq)\int \frac{1}{(e+fx)(g+hx)^3}dx}{3h}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{3h(g+hx)^3} + \text{Subst}\left(\frac{(bfpq)\int \left(\frac{f^3}{(fg-eh)^3(e+fx)} - \frac{h}{(fg-eh)(g+hx)^3} - \frac{}{(fg-eh)}\right.}{3h}\right.$$

$$= \frac{bfpq}{6h(fg-eh)(g+hx)^2} + \frac{bf^2pq}{3h(fg-eh)^2(g+hx)} + \frac{bf^3pq\log(e+fx)}{3h(fg-eh)^3} - \frac{a+b\log\left(c\left(d(e\right.\right.}{3h(g+h}$$

Mathematica [A] time = 0.195175, size = 115, normalized size = 0.77

$$\frac{-2a-2b\log\left(c\left(d(e+fx)^p\right)^q\right)+\frac{bfpq(g+hx)\left(2f^2(g+hx)^2\log(e+fx)+(fg-eh)(-eh+3fg+2fhx)-2f^2(g+hx)^2\log(g+hx)\right)}{(fg-eh)^3}}{6h(g+hx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^4,x]
```

```
[Out] (-2*a - 2*b*Log[c*(d*(e + f*x)^p)^q] + (b*f*p*q*(g + h*x)*((f*g - e*h)*(3*f
*g - e*h + 2*f*h*x) + 2*f^2*(g + h*x)^2*Log[e + f*x] - 2*f^2*(g + h*x)^2*Lo
g[g + h*x]))/(f*g - e*h)^3)/(6*h*(g + h*x)^3)
```

Maple [F] time = 0.661, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{\left(hx+g\right)^4}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x)
```

Maxima [B] time = 1.2077, size = 413, normalized size = 2.77

$$\frac{1}{6}\left(\frac{2f^2\log\left(fx+e\right)}{f^3g^3h-3ef^2g^2h^2+3e^2fgh^3-e^3h^4} - \frac{2f^2\log\left(hx+g\right)}{f^3g^3h-3ef^2g^2h^2+3e^2fgh^3-e^3h^4} + \frac{2}{f^2g^4h-2efg^3h^2+e^2g^2h^3+\left(f^2g^2h^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(2*f^2*log(f*x + e)/(f^3*g^3*h - 3*e*f^2*g^2*h^2 + 3*e^2*f*g*h^3 - e^3*
h^4) - 2*f^2*log(h*x + g)/(f^3*g^3*h - 3*e*f^2*g^2*h^2 + 3*e^2*f*g*h^3 - e^
3*h^4) + (2*f*h*x + 3*f*g - e*h)/(f^2*g^4*h - 2*e*f*g^3*h^2 + e^2*g^2*h^3 +
 (f^2*g^2*h^3 - 2*e*f*g*h^4 + e^2*h^5)*x^2 + 2*(f^2*g^3*h^2 - 2*e*f*g^2*h^3
 + e^2*g*h^4)*x))*b*f*p*q - 1/3*b*log(((f*x + e)^p*d)^q*c)/(h^4*x^3 + 3*g*h
^3*x^2 + 3*g^2*h^2*x + g^3*h) - 1/3*a/(h^4*x^3 + 3*g*h^3*x^2 + 3*g^2*h^2*x
+ g^3*h)
```

Fricas [B] time = 2.1103, size = 1169, normalized size = 7.85

$$-\frac{2\,af^3g^3 - 6\,aef^2g^2h + 6\,ae^2fgh^2 - 2\,ae^3h^3 - 2\left(bf^3gh^2 - bef^2h^3\right)pqx^2 - \left(5\,bf^3g^2h - 6\,bef^2gh^2 + be^2fh^3\right)pqx - \left(3\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(2*a*f^3*g^3 - 6*a*e*f^2*g^2*h + 6*a*e^2*f*g*h^2 - 2*a*e^3*h^3 - 2*(b*
f^3*g*h^2 - b*e*f^2*h^3)*p*q*x^2 - (5*b*f^3*g^2*h - 6*b*e*f^2*g*h^2 + b*e^2
*f*h^3)*p*q*x - (3*b*f^3*g^3 - 4*b*e*f^2*g^2*h + b*e^2*f*g*h^2)*p*q + 2*(b*
f^3*g^3 - 3*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*q*log(d) - 2*(b*f^
3*h^3*p*q*x^3 + 3*b*f^3*g*h^2*p*q*x^2 + 3*b*f^3*g^2*h*p*q*x + (3*b*e*f^2*g^
2*h - 3*b*e^2*f*g*h^2 + b*e^3*h^3)*p*q)*log(f*x + e) + 2*(b*f^3*h^3*p*q*x^3
 + 3*b*f^3*g*h^2*p*q*x^2 + 3*b*f^3*g^2*h*p*q*x + b*f^3*g^3*p*q)*log(h*x + g
) + 2*(b*f^3*g^3 - 3*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*log(c))/(
f^3*g^6*h - 3*e*f^2*g^5*h^2 + 3*e^2*f*g^4*h^3 - e^3*g^3*h^4 + (f^3*g^3*h^4
- 3*e*f^2*g^2*h^5 + 3*e^2*f*g*h^6 - e^3*h^7)*x^3 + 3*(f^3*g^4*h^3 - 3*e*f^2
*g^3*h^4 + 3*e^2*f*g^2*h^5 - e^3*g*h^6)*x^2 + 3*(f^3*g^5*h^2 - 3*e*f^2*g^4*
h^3 + 3*e^2*f*g^3*h^4 - e^3*g^2*h^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**4,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.18124, size = 868, normalized size = 5.83

$$\frac{2\,bf^3h^3pqx^3\log\left(fx+e\right) - 2\,bf^3h^3pqx^3\log\left(hx+g\right) + 6\,bf^3gh^2pqx^2\log\left(fx+e\right) - 6\,bf^3gh^2pqx^2\log\left(hx+g\right) + 2\,bf^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^4,x, algorithm="giac")
```

```
[Out] 1/6*(2*b*f^3*h^3*p*q*x^3*log(f*x + e) - 2*b*f^3*h^3*p*q*x^3*log(h*x + g) +
6*b*f^3*g*h^2*p*q*x^2*log(f*x + e) - 6*b*f^3*g*h^2*p*q*x^2*log(h*x + g) + 2
```

```
*b*f^3*g*h^2*p*q*x^2 - 2*b*f^2*h^3*p*q*x^2*e + 6*b*f^3*g^2*h*p*q*x*log(f*x
+ e) - 6*b*f^3*g^2*h*p*q*x*log(h*x + g) + 5*b*f^3*g^2*h*p*q*x - 6*b*f^2*g*h
^2*p*q*x*e + 6*b*f^2*g^2*h*p*q*e*log(f*x + e) - 2*b*f^3*g^3*p*q*log(h*x + g
) + 3*b*f^3*g^3*p*q + b*f*h^3*p*q*x*e^2 - 4*b*f^2*g^2*h*p*q*e - 6*b*f*g*h^2
*p*q*e^2*log(f*x + e) - 2*b*f^3*g^3*q*log(d) + 6*b*f^2*g^2*h*q*e*log(d) + b
*f*g*h^2*p*q*e^2 + 2*b*h^3*p*q*e^3*log(f*x + e) - 2*b*f^3*g^3*log(c) + 6*b*
f^2*g^2*h*e*log(c) - 6*b*f*g*h^2*q*e^2*log(d) - 2*a*f^3*g^3 + 6*a*f^2*g^2*h
*e - 6*b*f*g*h^2*e^2*log(c) + 2*b*h^3*q*e^3*log(d) - 6*a*f*g*h^2*e^2 + 2*b*
h^3*e^3*log(c) + 2*a*h^3*e^3)/(f^3*g^3*h^4*x^3 - 3*f^2*g^2*h^5*x^3*e + 3*f^
3*g^4*h^3*x^2 + 3*f*g*h^6*x^3*e^2 - 9*f^2*g^3*h^4*x^2*e + 3*f^3*g^5*h^2*x -
 h^7*x^3*e^3 + 9*f*g^2*h^5*x^2*e^2 - 9*f^2*g^4*h^3*x*e + f^3*g^6*h - 3*g*h^
6*x^2*e^3 + 9*f*g^3*h^4*x*e^2 - 3*f^2*g^5*h^2*e - 3*g^2*h^5*x*e^3 + 3*f*g^4
*h^3*e^2 - g^3*h^4*e^3)
```

3.428 $\int (g+hx)^3 \left(a+b\log \left(c \left(d(e+fx)^p\right)^q\right)\right)^2 \, dx$

Optimal. Leaf size=409

$$-\frac{2bh^2pq(e+fx)^3(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^4}-\frac{bpq(fg-eh)^4\log(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^4h}-2$$

```
[Out] (2*b^2*(f*g - e*h)^3*p^2*q^2*x)/f^3 + (3*b^2*h*(f*g - e*h)^2*p^2*q^2*(e + f
*x)^2)/(4*f^4) + (2*b^2*h^2*(f*g - e*h)*p^2*q^2*(e + f*x)^3)/(9*f^4) + (b^2
*h^3*p^2*q^2*(e + f*x)^4)/(32*f^4) + (b^2*(f*g - e*h)^4*p^2*q^2*Log[e + f*x
]^2)/(4*f^4*h) - (2*b*(f*g - e*h)^3*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/f^4 - (3*b*h*(f*g - e*h)^2*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(2*f^4) - (2*b*h^2*(f*g - e*h)*p*q*(e + f*x)^3*(a + b*Log[c*(d*(
e + f*x)^p)^q]))/(3*f^4) - (b*h^3*p*q*(e + f*x)^4*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/(8*f^4) - (b*(f*g - e*h)^4*p*q*Log[e + f*x]*(a + b*Log[c*(d*(e + f
*x)^p)^q]))/(2*f^4*h) + ((g + h*x)^4*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4
*h)
```

Rubi [A] time = 1.03769, antiderivative size = 325, normalized size of antiderivative = 0.79, number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2398, 2411, 43, 2334, 12, 2301, 2445}

$$-\frac{bpq\left(\frac{36h^2(e+fx)^2(fg-eh)^2}{f^4}+\frac{16h^3(e+fx)^3(fg-eh)}{f^4}+\frac{48h(e+fx)(fg-eh)^3}{f^4}+\frac{12(fg-eh)^4\log(e+fx)}{f^4}+\frac{3h^4(e+fx)^4}{f^4}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{24h}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*(f*g - e*h)^3*p^2*q^2*x)/f^3 + (3*b^2*h*(f*g - e*h)^2*p^2*q^2*(e + f
*x)^2)/(4*f^4) + (2*b^2*h^2*(f*g - e*h)*p^2*q^2*(e + f*x)^3)/(9*f^4) + (b^2
*h^3*p^2*q^2*(e + f*x)^4)/(32*f^4) + (b^2*(f*g - e*h)^4*p^2*q^2*Log[e + f*x
]^2)/(4*f^4*h) - (b*p*q*((48*h*(f*g - e*h)^3*(e + f*x))/f^4 + (36*h^2*(f*g
- e*h)^2*(e + f*x)^2)/f^4 + (16*h^3*(f*g - e*h)*(e + f*x)^3)/f^4 + (3*h^4*(
e + f*x)^4)/f^4 + (12*(f*g - e*h)^4*Log[e + f*x])/f^4)*(a + b*Log[c*(d*(e +
 f*x)^p)^q]))/(24*h) + ((g + h*x)^4*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4*
h)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^3 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int (g+hx)^3 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$

$$= \frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{4h} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^4(a+b}{}}{2h}\right.$$

$$= \frac{(g+hx)^4\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{4h} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{\left(\frac{fg-}{f}\right.}{}\right.}{}\right.$$

$$= -\frac{bpq\left(\frac{48h(fg-eh)^3(e+fx)}{f^4} + \frac{36h^2(fg-eh)^2(e+fx)^2}{f^4} + \frac{16h^3(fg-eh)(e+fx)^3}{f^4} + \frac{3h^4(e+fx}{f^4}\right.}{24h}$$

$$= -\frac{bpq\left(\frac{48h(fg-eh)^3(e+fx)}{f^4} + \frac{36h^2(fg-eh)^2(e+fx)^2}{f^4} + \frac{16h^3(fg-eh)(e+fx)^3}{f^4} + \frac{3h^4(e+fx}{f^4}\right.}{24h}$$

$$= \frac{2b^2(fg-eh)^3p^2q^2x}{f^3} + \frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4} + \frac{2b^2h^2(fg-eh)p}{9f^4}$$

$$= \frac{2b^2(fg-eh)^3p^2q^2x}{f^3} + \frac{3b^2h(fg-eh)^2p^2q^2(e+fx)^2}{4f^4} + \frac{2b^2h^2(fg-eh)p}{9f^4}$$

Mathematica [A] time = 0.269298, size = 400, normalized size = 0.98

$$64bh^2pq(fg-eh)\left(bfpqx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)+9bh^3pq\left(bfpqx\left(6e^2fx+4\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (288*(f*g - e*h)^3*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 432*h*(f*
g - e*h)^2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 288*h^2*(f*g -
e*h)*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 72*h^3*(e + f*x)^4*(a
 + b*Log[c*(d*(e + f*x)^p)^q])^2 - 576*b*(f*g - e*h)^3*p*q*(f*(a - b*p*q)*x
 + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + 216*b*h*(f*g - e*h)^2*p*q*(b*f*p
*q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) + 64*b*h
^2*(f*g - e*h)*p*q*(b*f*p*q*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(
a + b*Log[c*(d*(e + f*x)^p)^q])) + 9*b*h^3*p*q*(b*f*p*q*x*(4*e^3 + 6*e^2*f*
x + 4*e*f^2*x^2 + f^3*x^3) - 4*(e + f*x)^4*(a + b*Log[c*(d*(e + f*x)^p)^q])
))/(288*f^4)
```

Maple [F] time = 0.499, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^3 \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [B] time = 1.31452, size = 1208, normalized size = 2.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*h^3*x^4*log(((f*x + e)^p*d)^q*c)^2 + 1/2*a*b*h^3*x^4*log(((f*x + e)
^p*d)^q*c) + b^2*g*h^2*x^3*log(((f*x + e)^p*d)^q*c)^2 + 1/4*a^2*h^3*x^4 - 2
*a*b*f*g^3*p*q*(x/f - e*log(f*x + e)/f^2) - 1/24*a*b*f*h^3*p*q*(12*e^4*log(
f*x + e)/f^5 + (3*f^3*x^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*e^3*x)/f^4) + 1/
3*a*b*f*g*h^2*p*q*(6*e^3*log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*
x)/f^3) - 3/2*a*b*f*g^2*h*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2
) + 2*a*b*g*h^2*x^3*log(((f*x + e)^p*d)^q*c) + 3/2*b^2*g^2*h*x^2*log(((f*x
+ e)^p*d)^q*c)^2 + a^2*g*h^2*x^3 + 3*a*b*g^2*h*x^2*log(((f*x + e)^p*d)^q*c)
 + b^2*g^3*x*log(((f*x + e)^p*d)^q*c)^2 + 3/2*a^2*g^2*h*x^2 + 2*a*b*g^3*x*l
og(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e
)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2*
g^3 - 3/4*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x
 + e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x
 + e))*p^2*q^2/f^2)*b^2*g^2*h + 1/18*(6*f*p*q*(6*e^3*log(f*x + e)/f^4 - (2*
f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x + e)^p*d)^q*c) + (4*f^3*x^3 -
 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*p
^2*q^2/f^3)*b^2*g*h^2 - 1/288*(12*f*p*q*(12*e^4*log(f*x + e)/f^5 + (3*f^3*x
^4 - 4*e*f^2*x^3 + 6*e^2*f*x^2 - 12*e^3*x)/f^4)*log(((f*x + e)^p*d)^q*c) -
(9*f^4*x^4 - 28*e*f^3*x^3 + 78*e^2*f^2*x^2 + 72*e^4*log(f*x + e)^2 - 300*e^
3*f*x + 300*e^4*log(f*x + e))*p^2*q^2/f^4)*b^2*h^3 + a^2*g^3*x
```

Fricas [B] time = 2.74883, size = 3548, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/288*(9*(b^2*f^4*h^3*p^2*q^2 - 4*a*b*f^4*h^3*p*q + 8*a^2*f^4*h^3)*x^4 + 4*
(72*a^2*f^4*g*h^2 + (16*b^2*f^4*g*h^2 - 7*b^2*e*f^3*h^3)*p^2*q^2 - 12*(4*a*
b*f^4*g*h^2 - a*b*e*f^3*h^3)*p*q)*x^3 + 6*(72*a^2*f^4*g^2*h + (36*b^2*f^4*g
^2*h - 40*b^2*e*f^3*g*h^2 + 13*b^2*e^2*f^2*h^3)*p^2*q^2 - 12*(6*a*b*f^4*g^2
*h - 4*a*b*e*f^3*g*h^2 + a*b*e^2*f^2*h^3)*p*q)*x^2 + 72*(b^2*f^4*h^3*p^2*q^
2*x^4 + 4*b^2*f^4*g*h^2*p^2*q^2*x^3 + 6*b^2*f^4*g^2*h*p^2*q^2*x^2 + 4*b^2*f
^4*g^3*p^2*q^2*x + (4*b^2*e*f^3*g^3 - 6*b^2*e^2*f^2*g^2*h + 4*b^2*e^3*f*g*h
^2 - b^2*e^4*h^3)*p^2*q^2)*log(f*x + e)^2 + 72*(b^2*f^4*h^3*x^4 + 4*b^2*f^4
*g*h^2*x^3 + 6*b^2*f^4*g^2*h*x^2 + 4*b^2*f^4*g^3*x)*log(c)^2 + 72*(b^2*f^4*
h^3*q^2*x^4 + 4*b^2*f^4*g*h^2*q^2*x^3 + 6*b^2*f^4*g^2*h*q^2*x^2 + 4*b^2*f^4
*g^3*q^2*x)*log(d)^2 + 12*(24*a^2*f^4*g^3 + (48*b^2*f^4*g^3 - 108*b^2*e*f^3
```

```
*g^2*h + 88*b^2*e^2*f^2*g*h^2 - 25*b^2*e^3*f*h^3)*p^2*q^2 - 12*(4*a*b*f^4*g
^3 - 6*a*b*e*f^3*g^2*h + 4*a*b*e^2*f^2*g*h^2 - a*b*e^3*f*h^3)*p*q)*x - 12*(
(48*b^2*e*f^3*g^3 - 108*b^2*e^2*f^2*g^2*h + 88*b^2*e^3*f*g*h^2 - 25*b^2*e^4
*h^3)*p^2*q^2 + 3*(b^2*f^4*h^3*p^2*q^2 - 4*a*b*f^4*h^3*p*q)*x^4 - 4*(12*a*b
*f^4*g*h^2*p*q - (4*b^2*f^4*g*h^2 - b^2*e*f^3*h^3)*p^2*q^2)*x^3 - 12*(4*a*b
*e*f^3*g^3 - 6*a*b*e^2*f^2*g^2*h + 4*a*b*e^3*f*g*h^2 - a*b*e^4*h^3)*p*q - 6
*(12*a*b*f^4*g^2*h*p*q - (6*b^2*f^4*g^2*h - 4*b^2*e*f^3*g*h^2 + b^2*e^2*f^2
*h^3)*p^2*q^2)*x^2 - 12*(4*a*b*f^4*g^3*p*q - (4*b^2*f^4*g^3 - 6*b^2*e*f^3*g
^2*h + 4*b^2*e^2*f^2*g*h^2 - b^2*e^3*f*h^3)*p^2*q^2)*x - 12*(b^2*f^4*h^3*p*
q*x^4 + 4*b^2*f^4*g*h^2*p*q*x^3 + 6*b^2*f^4*g^2*h*p*q*x^2 + 4*b^2*f^4*g^3*p
*q*x + (4*b^2*e*f^3*g^3 - 6*b^2*e^2*f^2*g^2*h + 4*b^2*e^3*f*g*h^2 - b^2*e^4
*h^3)*p*q)*log(c) - 12*(b^2*f^4*h^3*p*q^2*x^4 + 4*b^2*f^4*g*h^2*p*q^2*x^3 +
 6*b^2*f^4*g^2*h*p*q^2*x^2 + 4*b^2*f^4*g^3*p*q^2*x + (4*b^2*e*f^3*g^3 - 6*b
^2*e^2*f^2*g^2*h + 4*b^2*e^3*f*g*h^2 - b^2*e^4*h^3)*p*q^2)*log(d))*log(f*x
+ e) - 12*(3*(b^2*f^4*h^3*p*q - 4*a*b*f^4*h^3)*x^4 - 4*(12*a*b*f^4*g*h^2 -
(4*b^2*f^4*g*h^2 - b^2*e*f^3*h^3)*p*q)*x^3 - 6*(12*a*b*f^4*g^2*h - (6*b^2*f
^4*g^2*h - 4*b^2*e*f^3*g*h^2 + b^2*e^2*f^2*h^3)*p*q)*x^2 - 12*(4*a*b*f^4*g^
3 - (4*b^2*f^4*g^3 - 6*b^2*e*f^3*g^2*h + 4*b^2*e^2*f^2*g*h^2 - b^2*e^3*f*h^
3)*p*q)*x)*log(c) - 12*(3*(b^2*f^4*h^3*p*q^2 - 4*a*b*f^4*h^3*q)*x^4 - 4*(12
*a*b*f^4*g*h^2*q - (4*b^2*f^4*g*h^2 - b^2*e*f^3*h^3)*p*q^2)*x^3 - 6*(12*a*b
*f^4*g^2*h*q - (6*b^2*f^4*g^2*h - 4*b^2*e*f^3*g*h^2 + b^2*e^2*f^2*h^3)*p*q^
2)*x^2 - 12*(4*a*b*f^4*g^3*q - (4*b^2*f^4*g^3 - 6*b^2*e*f^3*g^2*h + 4*b^2*e
^2*f^2*g*h^2 - b^2*e^3*f*h^3)*p*q^2)*x - 12*(b^2*f^4*h^3*q*x^4 + 4*b^2*f^4*
g*h^2*q*x^3 + 6*b^2*f^4*g^2*h*q*x^2 + 4*b^2*f^4*g^3*q*x)*log(c))*log(d))/f^
4
```

Sympy [A] time = 116.264, size = 2623, normalized size = 6.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**3*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g**3*x + 3*a**2*g**2*h*x**2/2 + a**2*g*h**2*x**3 + a**2*h**
3*x**4/4 - a*b*e**4*h**3*p*q*log(e + f*x)/(2*f**4) + 2*a*b*e**3*g*h**2*p*q*
log(e + f*x)/f**3 + a*b*e**3*h**3*p*q*x/(2*f**3) - 3*a*b*e**2*g**2*h*p*q*lo
g(e + f*x)/f**2 - 2*a*b*e**2*g*h**2*p*q*x/f**2 - a*b*e**2*h**3*p*q*x**2/(4*
f**2) + 2*a*b*e*g**3*p*q*log(e + f*x)/f + 3*a*b*e*g**2*h*p*q*x/f + a*b*e*g*
h**2*p*q*x**2/f + a*b*e*h**3*p*q*x**3/(6*f) + 2*a*b*g**3*p*q*x*log(e + f*x)
 - 2*a*b*g**3*p*q*x + 2*a*b*g**3*q*x*log(d) + 2*a*b*g**3*x*log(c) + 3*a*b*g
**2*h*p*q*x**2*log(e + f*x) - 3*a*b*g**2*h*p*q*x**2/2 + 3*a*b*g**2*h*q*x**2
*log(d) + 3*a*b*g**2*h*x**2*log(c) + 2*a*b*g*h**2*p*q*x**3*log(e + f*x) - 2
*a*b*g*h**2*p*q*x**3/3 + 2*a*b*g*h**2*q*x**3*log(d) + 2*a*b*g*h**2*x**3*log
(c) + a*b*h**3*p*q*x**4*log(e + f*x)/2 - a*b*h**3*p*q*x**4/8 + a*b*h**3*q*x
**4*log(d)/2 + a*b*h**3*x**4*log(c)/2 - b**2*e**4*h**3*p**2*q**2*log(e + f*
x)**2/(4*f**4) + 25*b**2*e**4*h**3*p**2*q**2*log(e + f*x)/(24*f**4) - b**2*
e**4*h**3*p*q**2*log(d)*log(e + f*x)/(2*f**4) - b**2*e**4*h**3*p*q*log(c)*l
og(e + f*x)/(2*f**4) + b**2*e**3*g*h**2*p**2*q**2*log(e + f*x)**2/f**3 - 11
*b**2*e**3*g*h**2*p**2*q**2*log(e + f*x)/(3*f**3) + 2*b**2*e**3*g*h**2*p*q*
*2*log(d)*log(e + f*x)/f**3 + 2*b**2*e**3*g*h**2*p*q*log(c)*log(e + f*x)/f*
*3 + b**2*e**3*h**3*p**2*q**2*x*log(e + f*x)/(2*f**3) - 25*b**2*e**3*h**3*p
**2*q**2*x/(24*f**3) + b**2*e**3*h**3*p*q**2*x*log(d)/(2*f**3) + b**2*e**3*
h**3*p*q*x*log(c)/(2*f**3) - 3*b**2*e**2*g**2*h*p**2*q**2*log(e + f*x)**2/(
2*f**2) + 9*b**2*e**2*g**2*h*p**2*q**2*log(e + f*x)/(2*f**2) - 3*b**2*e**2*
g**2*h*p*q**2*log(d)*log(e + f*x)/f**2 - 3*b**2*e**2*g**2*h*p*q*log(c)*log(
e + f*x)/f**2 - 2*b**2*e**2*g*h**2*p**2*q**2*x*log(e + f*x)/f**2 + 11*b**2*
```

```
e**2*g*h**2*p**2*q**2*x/(3*f**2) - 2*b**2*e**2*g*h**2*p*q**2*x*log(d)/f**2
- 2*b**2*e**2*g*h**2*p*q*x*log(c)/f**2 - b**2*e**2*h**3*p**2*q**2*x**2*log(
e + f*x)/(4*f**2) + 13*b**2*e**2*h**3*p**2*q**2*x**2/(48*f**2) - b**2*e**2*
h**3*p*q**2*x**2*log(d)/(4*f**2) - b**2*e**2*h**3*p*q*x**2*log(c)/(4*f**2)
+ b**2*e*g**3*p**2*q**2*log(e + f*x)**2/f - 2*b**2*e*g**3*p**2*q**2*log(e +
 f*x)/f + 2*b**2*e*g**3*p*q**2*log(d)*log(e + f*x)/f + 2*b**2*e*g**3*p*q*lo
g(c)*log(e + f*x)/f + 3*b**2*e*g**2*h*p**2*q**2*x*log(e + f*x)/f - 9*b**2*e
*g**2*h*p**2*q**2*x/(2*f) + 3*b**2*e*g**2*h*p*q**2*x*log(d)/f + 3*b**2*e*g*
*2*h*p*q*x*log(c)/f + b**2*e*g*h**2*p**2*q**2*x**2*log(e + f*x)/f - 5*b**2*
e*g*h**2*p**2*q**2*x**2/(6*f) + b**2*e*g*h**2*p*q**2*x**2*log(d)/f + b**2*e
*g*h**2*p*q*x**2*log(c)/f + b**2*e*h**3*p**2*q**2*x**3*log(e + f*x)/(6*f) -
 7*b**2*e*h**3*p**2*q**2*x**3/(72*f) + b**2*e*h**3*p*q**2*x**3*log(d)/(6*f)
 + b**2*e*h**3*p*q*x**3*log(c)/(6*f) + b**2*g**3*p**2*q**2*x*log(e + f*x)**
2 - 2*b**2*g**3*p**2*q**2*x*log(e + f*x) + 2*b**2*g**3*p**2*q**2*x + 2*b**2
*g**3*p*q**2*x*log(d)*log(e + f*x) - 2*b**2*g**3*p*q**2*x*log(d) + 2*b**2*g
**3*p*q*x*log(c)*log(e + f*x) - 2*b**2*g**3*p*q*x*log(c) + b**2*g**3*q**2*x
*log(d)**2 + 2*b**2*g**3*q*x*log(c)*log(d) + b**2*g**3*x*log(c)**2 + 3*b**2
*g**2*h*p**2*q**2*x**2*log(e + f*x)**2/2 - 3*b**2*g**2*h*p**2*q**2*x**2*log
(e + f*x)/2 + 3*b**2*g**2*h*p**2*q**2*x**2/4 + 3*b**2*g**2*h*p*q**2*x**2*lo
g(d)*log(e + f*x) - 3*b**2*g**2*h*p*q**2*x**2*log(d)/2 + 3*b**2*g**2*h*p*q*
x**2*log(c)*log(e + f*x) - 3*b**2*g**2*h*p*q*x**2*log(c)/2 + 3*b**2*g**2*h*
q**2*x**2*log(d)**2/2 + 3*b**2*g**2*h*q*x**2*log(c)*log(d) + 3*b**2*g**2*h*
x**2*log(c)**2/2 + b**2*g*h**2*p**2*q**2*x**3*log(e + f*x)**2 - 2*b**2*g*h*
*2*p**2*q**2*x**3*log(e + f*x)/3 + 2*b**2*g*h**2*p**2*q**2*x**3/9 + 2*b**2*
g*h**2*p*q**2*x**3*log(d)*log(e + f*x) - 2*b**2*g*h**2*p*q**2*x**3*log(d)/3
 + 2*b**2*g*h**2*p*q*x**3*log(c)*log(e + f*x) - 2*b**2*g*h**2*p*q*x**3*log(
c)/3 + b**2*g*h**2*q**2*x**3*log(d)**2 + 2*b**2*g*h**2*q*x**3*log(c)*log(d)
 + b**2*g*h**2*x**3*log(c)**2 + b**2*h**3*p**2*q**2*x**4*log(e + f*x)**2/4
- b**2*h**3*p**2*q**2*x**4*log(e + f*x)/8 + b**2*h**3*p**2*q**2*x**4/32 + b
**2*h**3*p*q**2*x**4*log(d)*log(e + f*x)/2 - b**2*h**3*p*q**2*x**4*log(d)/8
 + b**2*h**3*p*q*x**4*log(c)*log(e + f*x)/2 - b**2*h**3*p*q*x**4*log(c)/8 +
 b**2*h**3*q**2*x**4*log(d)**2/4 + b**2*h**3*q*x**4*log(c)*log(d)/2 + b**2*
h**3*x**4*log(c)**2/4, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))**2*(g**3*x +
3*g**2*h*x**2/2 + g*h**2*x**3 + h**3*x**4/4), True))
```

Giac [B] time = 1.5131, size = 5316, normalized size = 13.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^3*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g^3*p^2*q^2*log(f*x + e)^2/f + 3/2*(f*x + e)^2*b^2*g^2*h*p^2*
q^2*log(f*x + e)^2/f^2 + (f*x + e)^3*b^2*g*h^2*p^2*q^2*log(f*x + e)^2/f^3 +
 1/4*(f*x + e)^4*b^2*h^3*p^2*q^2*log(f*x + e)^2/f^4 - 3*(f*x + e)*b^2*g^2*h
*p^2*q^2*e*log(f*x + e)^2/f^2 - 3*(f*x + e)^2*b^2*g*h^2*p^2*q^2*e*log(f*x +
 e)^2/f^3 - (f*x + e)^3*b^2*h^3*p^2*q^2*e*log(f*x + e)^2/f^4 - 2*(f*x + e)*
b^2*g^3*p^2*q^2*log(f*x + e)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p^2*q^2*log(f*x
+ e)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*p^2*q^2*log(f*x + e)/f^3 - 1/8*(f*x +
e)^4*b^2*h^3*p^2*q^2*log(f*x + e)/f^4 + 6*(f*x + e)*b^2*g^2*h*p^2*q^2*e*log
(f*x + e)/f^2 + 3*(f*x + e)^2*b^2*g*h^2*p^2*q^2*e*log(f*x + e)/f^3 + 2/3*(f
*x + e)^3*b^2*h^3*p^2*q^2*e*log(f*x + e)/f^4 + 3*(f*x + e)*b^2*g*h^2*p^2*q^
2*e^2*log(f*x + e)^2/f^3 + 3/2*(f*x + e)^2*b^2*h^3*p^2*q^2*e^2*log(f*x + e)
^2/f^4 + 2*(f*x + e)*b^2*g^3*p*q^2*log(f*x + e)*log(d)/f + 3*(f*x + e)^2*b^
2*g^2*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)^3*b^2*g*h^2*p*q^2*log(f
*x + e)*log(d)/f^3 + 1/2*(f*x + e)^4*b^2*h^3*p*q^2*log(f*x + e)*log(d)/f^4
```

- 6*(f*x + e)*b^2*g^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)^2*b^2
*g*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 - 2*(f*x + e)^3*b^2*h^3*p*q^2*e*log(
f*x + e)*log(d)/f^4 + 2*(f*x + e)*b^2*g^3*p^2*q^2/f + 3/4*(f*x + e)^2*b^2*g
^2*h*p^2*q^2/f^2 + 2/9*(f*x + e)^3*b^2*g*h^2*p^2*q^2/f^3 + 1/32*(f*x + e)^4
*b^2*h^3*p^2*q^2/f^4 - 6*(f*x + e)*b^2*g^2*h*p^2*q^2*e/f^2 - 3/2*(f*x + e)^
2*b^2*g*h^2*p^2*q^2*e/f^3 - 2/9*(f*x + e)^3*b^2*h^3*p^2*q^2*e/f^4 - 6*(f*x
+ e)*b^2*g*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 - 3/2*(f*x + e)^2*b^2*h^3*p^2*q
^2*e^2*log(f*x + e)/f^4 - (f*x + e)*b^2*h^3*p^2*q^2*e^3*log(f*x + e)^2/f^4
+ 2*(f*x + e)*b^2*g^3*p*q*log(f*x + e)*log(c)/f + 3*(f*x + e)^2*b^2*g^2*h*p
*q*log(f*x + e)*log(c)/f^2 + 2*(f*x + e)^3*b^2*g*h^2*p*q*log(f*x + e)*log(c
)/f^3 + 1/2*(f*x + e)^4*b^2*h^3*p*q*log(f*x + e)*log(c)/f^4 - 6*(f*x + e)*b
^2*g^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 6*(f*x + e)^2*b^2*g*h^2*p*q*e*log(
f*x + e)*log(c)/f^3 - 2*(f*x + e)^3*b^2*h^3*p*q*e*log(f*x + e)*log(c)/f^4 -
 2*(f*x + e)*b^2*g^3*p*q^2*log(d)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p*q^2*log(d
)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*p*q^2*log(d)/f^3 - 1/8*(f*x + e)^4*b^2*h^
3*p*q^2*log(d)/f^4 + 6*(f*x + e)*b^2*g^2*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)
^2*b^2*g*h^2*p*q^2*e*log(d)/f^3 + 2/3*(f*x + e)^3*b^2*h^3*p*q^2*e*log(d)/f^
4 + 6*(f*x + e)*b^2*g*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 + 3*(f*x + e)^2
*b^2*h^3*p*q^2*e^2*log(f*x + e)*log(d)/f^4 + (f*x + e)*b^2*g^3*q^2*log(d)^2
/f + 3/2*(f*x + e)^2*b^2*g^2*h*q^2*log(d)^2/f^2 + (f*x + e)^3*b^2*g*h^2*q^2
log(d)^2/f^3 + 1/4(f*x + e)^4*b^2*h^3*q^2*log(d)^2/f^4 - 3*(f*x + e)*b^2*
g^2*h*q^2*e*log(d)^2/f^2 - 3*(f*x + e)^2*b^2*g*h^2*q^2*e*log(d)^2/f^3 - (f*
x + e)^3*b^2*h^3*q^2*e*log(d)^2/f^4 + 6*(f*x + e)*b^2*g*h^2*p^2*q^2*e^2/f^3
 + 3/4*(f*x + e)^2*b^2*h^3*p^2*q^2*e^2/f^4 + 2*(f*x + e)*a*b*g^3*p*q*log(f*
x + e)/f + 3*(f*x + e)^2*a*b*g^2*h*p*q*log(f*x + e)/f^2 + 2*(f*x + e)^3*a*b
*g*h^2*p*q*log(f*x + e)/f^3 + 1/2*(f*x + e)^4*a*b*h^3*p*q*log(f*x + e)/f^4
+ 2*(f*x + e)*b^2*h^3*p^2*q^2*e^3*log(f*x + e)/f^4 - 6*(f*x + e)*a*b*g^2*h*
p*q*e*log(f*x + e)/f^2 - 6*(f*x + e)^2*a*b*g*h^2*p*q*e*log(f*x + e)/f^3 - 2
*(f*x + e)^3*a*b*h^3*p*q*e*log(f*x + e)/f^4 - 2*(f*x + e)*b^2*g^3*p*q*log(c
)/f - 3/2*(f*x + e)^2*b^2*g^2*h*p*q*log(c)/f^2 - 2/3*(f*x + e)^3*b^2*g*h^2*
p*q*log(c)/f^3 - 1/8*(f*x + e)^4*b^2*h^3*p*q*log(c)/f^4 + 6*(f*x + e)*b^2*g
^2*h*p*q*e*log(c)/f^2 + 3*(f*x + e)^2*b^2*g*h^2*p*q*e*log(c)/f^3 + 2/3*(f*x
 + e)^3*b^2*h^3*p*q*e*log(c)/f^4 + 6*(f*x + e)*b^2*g*h^2*p*q*e^2*log(f*x +
e)*log(c)/f^3 + 3*(f*x + e)^2*b^2*h^3*p*q*e^2*log(f*x + e)*log(c)/f^4 - 6*(
f*x + e)*b^2*g*h^2*p*q^2*e^2*log(d)/f^3 - 3/2*(f*x + e)^2*b^2*h^3*p*q^2*e^2
log(d)/f^4 - 2(f*x + e)*b^2*h^3*p*q^2*e^3*log(f*x + e)*log(d)/f^4 + 2*(f*
x + e)*b^2*g^3*q*log(c)*log(d)/f + 3*(f*x + e)^2*b^2*g^2*h*q*log(c)*log(d)/
f^2 + 2*(f*x + e)^3*b^2*g*h^2*q*log(c)*log(d)/f^3 + 1/2*(f*x + e)^4*b^2*h^3
*q*log(c)*log(d)/f^4 - 6*(f*x + e)*b^2*g^2*h*q*e*log(c)*log(d)/f^2 - 6*(f*x
 + e)^2*b^2*g*h^2*q*e*log(c)*log(d)/f^3 - 2*(f*x + e)^3*b^2*h^3*q*e*log(c)*
log(d)/f^4 + 3*(f*x + e)*b^2*g*h^2*q^2*e^2*log(d)^2/f^3 + 3/2*(f*x + e)^2*b
^2*h^3*q^2*e^2*log(d)^2/f^4 - 2*(f*x + e)*a*b*g^3*p*q/f - 3/2*(f*x + e)^2*a
*b*g^2*h*p*q/f^2 - 2/3*(f*x + e)^3*a*b*g*h^2*p*q/f^3 - 1/8*(f*x + e)^4*a*b*
h^3*p*q/f^4 - 2*(f*x + e)*b^2*h^3*p^2*q^2*e^3/f^4 + 6*(f*x + e)*a*b*g^2*h*p
*q*e/f^2 + 3*(f*x + e)^2*a*b*g*h^2*p*q*e/f^3 + 2/3*(f*x + e)^3*a*b*h^3*p*q*
e/f^4 + 6*(f*x + e)*a*b*g*h^2*p*q*e^2*log(f*x + e)/f^3 + 3*(f*x + e)^2*a*b*
h^3*p*q*e^2*log(f*x + e)/f^4 - 6*(f*x + e)*b^2*g*h^2*p*q*e^2*log(c)/f^3 - 3
/2*(f*x + e)^2*b^2*h^3*p*q*e^2*log(c)/f^4 - 2*(f*x + e)*b^2*h^3*p*q*e^3*log
(f*x + e)*log(c)/f^4 + (f*x + e)*b^2*g^3*log(c)^2/f + 3/2*(f*x + e)^2*b^2*g
^2*h*log(c)^2/f^2 + (f*x + e)^3*b^2*g*h^2*log(c)^2/f^3 + 1/4*(f*x + e)^4*b^
2*h^3*log(c)^2/f^4 - 3*(f*x + e)*b^2*g^2*h*e*log(c)^2/f^2 - 3*(f*x + e)^2*b
^2*g*h^2*e*log(c)^2/f^3 - (f*x + e)^3*b^2*h^3*e*log(c)^2/f^4 + 2*(f*x + e)*
a*b*g^3*q*log(d)/f + 3*(f*x + e)^2*a*b*g^2*h*q*log(d)/f^2 + 2*(f*x + e)^3*a
*b*g*h^2*q*log(d)/f^3 + 1/2*(f*x + e)^4*a*b*h^3*q*log(d)/f^4 + 2*(f*x + e)*
b^2*h^3*p*q^2*e^3*log(d)/f^4 - 6*(f*x + e)*a*b*g^2*h*q*e*log(d)/f^2 - 6*(f*
x + e)^2*a*b*g*h^2*q*e*log(d)/f^3 - 2*(f*x + e)^3*a*b*h^3*q*e*log(d)/f^4 +
6*(f*x + e)*b^2*g*h^2*q*e^2*log(c)*log(d)/f^3 + 3*(f*x + e)^2*b^2*h^3*q*e^2
*log(c)*log(d)/f^4 - (f*x + e)*b^2*h^3*q^2*e^3*log(d)^2/f^4 - 6*(f*x + e)*a
*b*g*h^2*p*q*e^2/f^3 - 3/2*(f*x + e)^2*a*b*h^3*p*q*e^2/f^4 - 2*(f*x + e)*a*

```
b*h^3*p*q*e^3*log(f*x + e)/f^4 + 2*(f*x + e)*a*b*g^3*log(c)/f + 3*(f*x + e)
^2*a*b*g^2*h*log(c)/f^2 + 2*(f*x + e)^3*a*b*g*h^2*log(c)/f^3 + 1/2*(f*x + e
)^4*a*b*h^3*log(c)/f^4 + 2*(f*x + e)*b^2*h^3*p*q*e^3*log(c)/f^4 - 6*(f*x +
e)*a*b*g^2*h*e*log(c)/f^2 - 6*(f*x + e)^2*a*b*g*h^2*e*log(c)/f^3 - 2*(f*x +
 e)^3*a*b*h^3*e*log(c)/f^4 + 3*(f*x + e)*b^2*g*h^2*e^2*log(c)^2/f^3 + 3/2*(
f*x + e)^2*b^2*h^3*e^2*log(c)^2/f^4 + 6*(f*x + e)*a*b*g*h^2*q*e^2*log(d)/f^
3 + 3*(f*x + e)^2*a*b*h^3*q*e^2*log(d)/f^4 - 2*(f*x + e)*b^2*h^3*q*e^3*log(
c)*log(d)/f^4 + (f*x + e)*a^2*g^3/f + 3/2*(f*x + e)^2*a^2*g^2*h/f^2 + (f*x
+ e)^3*a^2*g*h^2/f^3 + 1/4*(f*x + e)^4*a^2*h^3/f^4 + 2*(f*x + e)*a*b*h^3*p*
q*e^3/f^4 - 3*(f*x + e)*a^2*g^2*h*e/f^2 - 3*(f*x + e)^2*a^2*g*h^2*e/f^3 - (
f*x + e)^3*a^2*h^3*e/f^4 + 6*(f*x + e)*a*b*g*h^2*e^2*log(c)/f^3 + 3*(f*x +
e)^2*a*b*h^3*e^2*log(c)/f^4 - (f*x + e)*b^2*h^3*e^3*log(c)^2/f^4 - 2*(f*x +
 e)*a*b*h^3*q*e^3*log(d)/f^4 + 3*(f*x + e)*a^2*g*h^2*e^2/f^3 + 3/2*(f*x + e
)^2*a^2*h^3*e^2/f^4 - 2*(f*x + e)*a*b*h^3*e^3*log(c)/f^4 - (f*x + e)*a^2*h^
3*e^3/f^4
```

3.429 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=323

$$-\frac{2bpq(fg-eh)^3\log(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^3h}-\frac{2bpq(e+fx)(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{f^3}-\frac{bh}{}$$

```
[Out] (2*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 + (b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^
2)/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3)/(27*f^3) + (b^2*(f*g - e*h)^3*
p^2*q^2*Log[e + f*x]^2)/(3*f^3*h) - (2*b*(f*g - e*h)^2*p*q*(e + f*x)*(a + b
*Log[c*(d*(e + f*x)^p)^q]))/f^3 - (b*h*(f*g - e*h)*p*q*(e + f*x)^2*(a + b*L
og[c*(d*(e + f*x)^p)^q]))/f^3 - (2*b*h^2*p*q*(e + f*x)^3*(a + b*Log[c*(d*(e
 + f*x)^p)^q]))/(9*f^3) - (2*b*(f*g - e*h)^3*p*q*Log[e + f*x]*(a + b*Log[c*
(d*(e + f*x)^p)^q]))/(3*f^3*h) + ((g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^
q])^2)/(3*h)
```

Rubi [A] time = 0.834571, antiderivative size = 264, normalized size of antiderivative = 0.82, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2398, 2411, 43, 2334, 12, 14, 2301, 2445}

$$-\frac{bpq\left(\frac{9h^2(e+fx)^2(fg-eh)}{f^3}+\frac{18h(e+fx)(fg-eh)^2}{f^3}+\frac{6(fg-eh)^3\log(e+fx)}{f^3}+\frac{2h^3(e+fx)^3}{f^3}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9h}+\frac{(g+hx)^3\left(a+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 + (b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^
2)/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3)/(27*f^3) + (b^2*(f*g - e*h)^3*
p^2*q^2*Log[e + f*x]^2)/(3*f^3*h) - (b*p*q*((18*h*(f*g - e*h)^2*(e + f*x))/
f^3 + (9*h^2*(f*g - e*h)*(e + f*x)^2)/f^3 + (2*h^3*(e + f*x)^3)/f^3 + (6*(f
*g - e*h)^3*Log[e + f*x])/f^3)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(9*h) + ((
g + h*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(3*h)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2334

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*(x_)^(m_.)*((d_) + (e_.)*(x_)^(r_
.))^(q_.), x_Symbol] :> With[{u = IntHide[x^m*(d + e*x^r)^q, x]}, Simp[u*(a
 + b*Log[c*x^n]), x] - Dist[b*n, Int[SimplifyIntegrand[u/x, x], x], x]] /;
FreeQ[{a, b, c, d, e, n, r}, x] && IGtQ[q, 0] && IntegerQ[m] &&  !(EqQ[q, 1
] && EqQ[m, -1])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx = \text{Subst}\left(\int (g+hx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$

$$= \frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{(g+hx)^3(a+}{}}{3h}\right.$$

$$= \frac{(g+hx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int \frac{(fg}{}\right.}{}\right.$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3}+\frac{9h^2(fg-eh)(e+fx)^2}{f^3}+\frac{2h^3(e+fx)^3}{f^3}+\frac{6(fg-eh)^3\log(e+fx)}{f^3}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3}+\frac{9h^2(fg-eh)(e+fx)^2}{f^3}+\frac{2h^3(e+fx)^3}{f^3}+\frac{6(fg-eh)^3\log(e+fx)}{f^3}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3}+\frac{9h^2(fg-eh)(e+fx)^2}{f^3}+\frac{2h^3(e+fx)^3}{f^3}+\frac{6(fg-eh)^3\log(e+fx)}{f^3}\right.}{9h}$$

$$= -\frac{bpq\left(\frac{18h(fg-eh)^2(e+fx)}{f^3}+\frac{9h^2(fg-eh)(e+fx)^2}{f^3}+\frac{2h^3(e+fx)^3}{f^3}+\frac{6(fg-eh)^3\log(e+fx)}{f^3}\right.}{9h}$$

$$= \frac{2b^2(fg-eh)^2p^2q^2x}{f^2}+\frac{b^2h(fg-eh)p^2q^2(e+fx)^2}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)}{27f^3}$$

Mathematica [A] time = 0.171716, size = 277, normalized size = 0.86

$$\frac{4bh^2pq\left(bfpqx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)+54h(e+fx)^2(fg-eh)\left(a+b\log\left(c\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (54*(f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 54*h*(f*g
- e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 18*h^2*(e + f*x)^3*
(a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 108*b*(f*g - e*h)^2*p*q*(f*(a - b*p*q)
*x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + 27*b*h*(f*g - e*h)*p*q*(b*f*p*
q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) + 4*b*h^2
*p*q*(b*f*p*q*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3*(e + f*x)^3*(a + b*Log[c*(d
*(e + f*x)^p)^q])))/(54*f^3)
```

Maple [F] time = 0.5, size = 0, normalized size = 0.

$$\int (hx+g)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 1.11124, size = 817, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] 1/3*b^2*h^2*x^3*log(((f*x + e)^p*d)^q*c)^2 - 2*a*b*f*g^2*p*q*(x/f - e*log(f
*x + e)/f^2) + 1/9*a*b*f*h^2*p*q*(6*e^3*log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e
*f*x^2 + 6*e^2*x)/f^3) - a*b*f*g*h*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2
*e*x)/f^2) + 2/3*a*b*h^2*x^3*log(((f*x + e)^p*d)^q*c) + b^2*g*h*x^2*log(((f
*x + e)^p*d)^q*c)^2 + 1/3*a^2*h^2*x^3 + 2*a*b*g*h*x^2*log(((f*x + e)^p*d)^q
*c) + b^2*g^2*x*log(((f*x + e)^p*d)^q*c)^2 + a^2*g*h*x^2 + 2*a*b*g^2*x*log(
((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p
*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*b^2*g^2
 - 1/2*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x +
e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x +
e))*p^2*q^2/f^2)*b^2*g*h + 1/54*(6*f*p*q*(6*e^3*log(f*x + e)/f^4 - (2*f^2*x
^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x + e)^p*d)^q*c) + (4*f^3*x^3 - 15*e
*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f*x + e))*p^2*q^
2/f^3)*b^2*h^2 + a^2*g^2*x
```

Fricas [B] time = 2.24703, size = 2348, normalized size = 7.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/54*(2*(2*b^2*f^3*h^2*p^2*q^2 - 6*a*b*f^3*h^2*p*q + 9*a^2*f^3*h^2)*x^3 + 3
*(18*a^2*f^3*g*h + (9*b^2*f^3*g*h - 5*b^2*e*f^2*h^2)*p^2*q^2 - 6*(3*a*b*f^3
*g*h - a*b*e*f^2*h^2)*p*q)*x^2 + 18*(b^2*f^3*h^2*p^2*q^2*x^3 + 3*b^2*f^3*g*
h*p^2*q^2*x^2 + 3*b^2*f^3*g^2*p^2*q^2*x + (3*b^2*e*f^2*g^2 - 3*b^2*e^2*f*g*
h + b^2*e^3*h^2)*p^2*q^2)*log(f*x + e)^2 + 18*(b^2*f^3*h^2*x^3 + 3*b^2*f^3*
g*h*x^2 + 3*b^2*f^3*g^2*x)*log(c)^2 + 18*(b^2*f^3*h^2*q^2*x^3 + 3*b^2*f^3*g
*h*q^2*x^2 + 3*b^2*f^3*g^2*q^2*x)*log(d)^2 + 6*(9*a^2*f^3*g^2 + (18*b^2*f^3
*g^2 - 27*b^2*e*f^2*g*h + 11*b^2*e^2*f*h^2)*p^2*q^2 - 6*(3*a*b*f^3*g^2 - 3*
a*b*e*f^2*g*h + a*b*e^2*f*h^2)*p*q)*x - 6*((18*b^2*e*f^2*g^2 - 27*b^2*e^2*f
*g*h + 11*b^2*e^3*h^2)*p^2*q^2 + 2*(b^2*f^3*h^2*p^2*q^2 - 3*a*b*f^3*h^2*p*q
)*x^3 - 6*(3*a*b*e*f^2*g^2 - 3*a*b*e^2*f*g*h + a*b*e^3*h^2)*p*q - 3*(6*a*b*
f^3*g*h*p*q - (3*b^2*f^3*g*h - b^2*e*f^2*h^2)*p^2*q^2)*x^2 - 6*(3*a*b*f^3*g
^2*p*q - (3*b^2*f^3*g^2 - 3*b^2*e*f^2*g*h + b^2*e^2*f*h^2)*p^2*q^2)*x - 6*(
b^2*f^3*h^2*p*q*x^3 + 3*b^2*f^3*g*h*p*q*x^2 + 3*b^2*f^3*g^2*p*q*x + (3*b^2*
e*f^2*g^2 - 3*b^2*e^2*f*g*h + b^2*e^3*h^2)*p*q)*log(c) - 6*(b^2*f^3*h^2*p*q
^2*x^3 + 3*b^2*f^3*g*h*p*q^2*x^2 + 3*b^2*f^3*g^2*p*q^2*x + (3*b^2*e*f^2*g^2
 - 3*b^2*e^2*f*g*h + b^2*e^3*h^2)*p*q^2)*log(d))*log(f*x + e) - 6*(2*(b^2*f
```

```
^3*h^2*p*q - 3*a*b*f^3*h^2)*x^3 - 3*(6*a*b*f^3*g*h - (3*b^2*f^3*g*h - b^2*e
*f^2*h^2)*p*q)*x^2 - 6*(3*a*b*f^3*g^2 - (3*b^2*f^3*g^2 - 3*b^2*e*f^2*g*h +
b^2*e^2*f*h^2)*p*q)*x)*log(c) - 6*(2*(b^2*f^3*h^2*p*q^2 - 3*a*b*f^3*h^2*q)*
x^3 - 3*(6*a*b*f^3*g*h*q - (3*b^2*f^3*g*h - b^2*e*f^2*h^2)*p*q^2)*x^2 - 6*(
3*a*b*f^3*g^2*q - (3*b^2*f^3*g^2 - 3*b^2*e*f^2*g*h + b^2*e^2*f*h^2)*p*q^2)*
x - 6*(b^2*f^3*h^2*q*x^3 + 3*b^2*f^3*g*h*q*x^2 + 3*b^2*f^3*g^2*q*x)*log(c))
*log(d))/f^3
```

Sympy [A] time = 31.5494, size = 1692, normalized size = 5.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g**2*x + a**2*g*h*x**2 + a**2*h**2*x**3/3 + 2*a*b*e**3*h**2
*p*q*log(e + f*x)/(3*f**3) - 2*a*b*e**2*g*h*p*q*log(e + f*x)/f**2 - 2*a*b*e
**2*h**2*p*q*x/(3*f**2) + 2*a*b*e*g**2*p*q*log(e + f*x)/f + 2*a*b*e*g*h*p*q
*x/f + a*b*e*h**2*p*q*x**2/(3*f) + 2*a*b*g**2*p*q*x*log(e + f*x) - 2*a*b*g*
*2*p*q*x + 2*a*b*g**2*q*x*log(d) + 2*a*b*g**2*x*log(c) + 2*a*b*g*h*p*q*x**2
*log(e + f*x) - a*b*g*h*p*q*x**2 + 2*a*b*g*h*q*x**2*log(d) + 2*a*b*g*h*x**2
*log(c) + 2*a*b*h**2*p*q*x**3*log(e + f*x)/3 - 2*a*b*h**2*p*q*x**3/9 + 2*a*
b*h**2*q*x**3*log(d)/3 + 2*a*b*h**2*x**3*log(c)/3 + b**2*e**3*h**2*p**2*q**
2*log(e + f*x)**2/(3*f**3) - 11*b**2*e**3*h**2*p**2*q**2*log(e + f*x)/(9*f*
*3) + 2*b**2*e**3*h**2*p*q**2*log(d)*log(e + f*x)/(3*f**3) + 2*b**2*e**3*h*
*2*p*q*log(c)*log(e + f*x)/(3*f**3) - b**2*e**2*g*h*p**2*q**2*log(e + f*x)*
*2/f**2 + 3*b**2*e**2*g*h*p**2*q**2*log(e + f*x)/f**2 - 2*b**2*e**2*g*h*p*q
**2*log(d)*log(e + f*x)/f**2 - 2*b**2*e**2*g*h*p*q*log(c)*log(e + f*x)/f**2
 - 2*b**2*e**2*h**2*p**2*q**2*x*log(e + f*x)/(3*f**2) + 11*b**2*e**2*h**2*p
**2*q**2*x/(9*f**2) - 2*b**2*e**2*h**2*p*q**2*x*log(d)/(3*f**2) - 2*b**2*e*
*2*h**2*p*q*x*log(c)/(3*f**2) + b**2*e*g**2*p**2*q**2*log(e + f*x)**2/f - 2
*b**2*e*g**2*p**2*q**2*log(e + f*x)/f + 2*b**2*e*g**2*p*q**2*log(d)*log(e +
 f*x)/f + 2*b**2*e*g**2*p*q*log(c)*log(e + f*x)/f + 2*b**2*e*g*h*p**2*q**2*
x*log(e + f*x)/f - 3*b**2*e*g*h*p**2*q**2*x/f + 2*b**2*e*g*h*p*q**2*x*log(d
)/f + 2*b**2*e*g*h*p*q*x*log(c)/f + b**2*e*h**2*p**2*q**2*x**2*log(e + f*x)
/(3*f) - 5*b**2*e*h**2*p**2*q**2*x**2/(18*f) + b**2*e*h**2*p*q**2*x**2*log(
d)/(3*f) + b**2*e*h**2*p*q*x**2*log(c)/(3*f) + b**2*g**2*p**2*q**2*x*log(e
+ f*x)**2 - 2*b**2*g**2*p**2*q**2*x*log(e + f*x) + 2*b**2*g**2*p**2*q**2*x
+ 2*b**2*g**2*p*q**2*x*log(d)*log(e + f*x) - 2*b**2*g**2*p*q**2*x*log(d) +
2*b**2*g**2*p*q*x*log(c)*log(e + f*x) - 2*b**2*g**2*p*q*x*log(c) + b**2*g**
2*q**2*x*log(d)**2 + 2*b**2*g**2*q*x*log(c)*log(d) + b**2*g**2*x*log(c)**2
+ b**2*g*h*p**2*q**2*x**2*log(e + f*x)**2 - b**2*g*h*p**2*q**2*x**2*log(e +
 f*x) + b**2*g*h*p**2*q**2*x**2/2 + 2*b**2*g*h*p*q**2*x**2*log(d)*log(e + f
*x) - b**2*g*h*p*q**2*x**2*log(d) + 2*b**2*g*h*p*q*x**2*log(c)*log(e + f*x)
 - b**2*g*h*p*q*x**2*log(c) + b**2*g*h*q**2*x**2*log(d)**2 + 2*b**2*g*h*q*x
**2*log(c)*log(d) + b**2*g*h*x**2*log(c)**2 + b**2*h**2*p**2*q**2*x**3*log(
e + f*x)**2/3 - 2*b**2*h**2*p**2*q**2*x**3*log(e + f*x)/9 + 2*b**2*h**2*p**
2*q**2*x**3/27 + 2*b**2*h**2*p*q**2*x**3*log(d)*log(e + f*x)/3 - 2*b**2*h**
2*p*q**2*x**3*log(d)/9 + 2*b**2*h**2*p*q*x**3*log(c)*log(e + f*x)/3 - 2*b**
2*h**2*p*q*x**3*log(c)/9 + b**2*h**2*q**2*x**3*log(d)**2/3 + 2*b**2*h**2*q*
x**3*log(c)*log(d)/3 + b**2*h**2*x**3*log(c)**2/3, Ne(f, 0)), ((a + b*log(c
*(d*e**p)**q))**2*(g**2*x + g*h*x**2 + h**2*x**3/3), True))
```

Giac [B] time = 1.40241, size = 3025, normalized size = 9.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g^2*p^2*q^2*log(f*x + e)^2/f + (f*x + e)^2*b^2*g*h*p^2*q^2*lo
g(f*x + e)^2/f^2 + 1/3*(f*x + e)^3*b^2*h^2*p^2*q^2*log(f*x + e)^2/f^3 - 2*(
f*x + e)*b^2*g*h*p^2*q^2*e*log(f*x + e)^2/f^2 - (f*x + e)^2*b^2*h^2*p^2*q^2
*e*log(f*x + e)^2/f^3 - 2*(f*x + e)*b^2*g^2*p^2*q^2*log(f*x + e)/f - (f*x +
 e)^2*b^2*g*h*p^2*q^2*log(f*x + e)/f^2 - 2/9*(f*x + e)^3*b^2*h^2*p^2*q^2*lo
g(f*x + e)/f^3 + 4*(f*x + e)*b^2*g*h*p^2*q^2*e*log(f*x + e)/f^2 + (f*x + e)
^2*b^2*h^2*p^2*q^2*e*log(f*x + e)/f^3 + (f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f
*x + e)^2/f^3 + 2*(f*x + e)*b^2*g^2*p*q^2*log(f*x + e)*log(d)/f + 2*(f*x +
e)^2*b^2*g*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2/3*(f*x + e)^3*b^2*h^2*p*q^2*
log(f*x + e)*log(d)/f^3 - 4*(f*x + e)*b^2*g*h*p*q^2*e*log(f*x + e)*log(d)/f
^2 - 2*(f*x + e)^2*b^2*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 + 2*(f*x + e)*b^
2*g^2*p^2*q^2/f + 1/2*(f*x + e)^2*b^2*g*h*p^2*q^2/f^2 + 2/27*(f*x + e)^3*b^
2*h^2*p^2*q^2/f^3 - 4*(f*x + e)*b^2*g*h*p^2*q^2*e/f^2 - 1/2*(f*x + e)^2*b^2
*h^2*p^2*q^2*e/f^3 - 2*(f*x + e)*b^2*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 + 2*(
f*x + e)*b^2*g^2*p*q*log(f*x + e)*log(c)/f + 2*(f*x + e)^2*b^2*g*h*p*q*log(
f*x + e)*log(c)/f^2 + 2/3*(f*x + e)^3*b^2*h^2*p*q*log(f*x + e)*log(c)/f^3 -
 4*(f*x + e)*b^2*g*h*p*q*e*log(f*x + e)*log(c)/f^2 - 2*(f*x + e)^2*b^2*h^2*
p*q*e*log(f*x + e)*log(c)/f^3 - 2*(f*x + e)*b^2*g^2*p*q^2*log(d)/f - (f*x +
 e)^2*b^2*g*h*p*q^2*log(d)/f^2 - 2/9*(f*x + e)^3*b^2*h^2*p*q^2*log(d)/f^3 +
 4*(f*x + e)*b^2*g*h*p*q^2*e*log(d)/f^2 + (f*x + e)^2*b^2*h^2*p*q^2*e*log(d
)/f^3 + 2*(f*x + e)*b^2*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 + (f*x + e)*b
^2*g^2*q^2*log(d)^2/f + (f*x + e)^2*b^2*g*h*q^2*log(d)^2/f^2 + 1/3*(f*x + e
)^3*b^2*h^2*q^2*log(d)^2/f^3 - 2*(f*x + e)*b^2*g*h*q^2*e*log(d)^2/f^2 - (f*
x + e)^2*b^2*h^2*q^2*e*log(d)^2/f^3 + 2*(f*x + e)*b^2*h^2*p^2*q^2*e^2/f^3 +
 2*(f*x + e)*a*b*g^2*p*q*log(f*x + e)/f + 2*(f*x + e)^2*a*b*g*h*p*q*log(f*x
 + e)/f^2 + 2/3*(f*x + e)^3*a*b*h^2*p*q*log(f*x + e)/f^3 - 4*(f*x + e)*a*b*
g*h*p*q*e*log(f*x + e)/f^2 - 2*(f*x + e)^2*a*b*h^2*p*q*e*log(f*x + e)/f^3 -
 2*(f*x + e)*b^2*g^2*p*q*log(c)/f - (f*x + e)^2*b^2*g*h*p*q*log(c)/f^2 - 2/
9*(f*x + e)^3*b^2*h^2*p*q*log(c)/f^3 + 4*(f*x + e)*b^2*g*h*p*q*e*log(c)/f^2
 + (f*x + e)^2*b^2*h^2*p*q*e*log(c)/f^3 + 2*(f*x + e)*b^2*h^2*p*q*e^2*log(f
*x + e)*log(c)/f^3 - 2*(f*x + e)*b^2*h^2*p*q^2*e^2*log(d)/f^3 + 2*(f*x + e)
*b^2*g^2*q*log(c)*log(d)/f + 2*(f*x + e)^2*b^2*g*h*q*log(c)*log(d)/f^2 + 2/
3*(f*x + e)^3*b^2*h^2*q*log(c)*log(d)/f^3 - 4*(f*x + e)*b^2*g*h*q*e*log(c)*
log(d)/f^2 - 2*(f*x + e)^2*b^2*h^2*q*e*log(c)*log(d)/f^3 + (f*x + e)*b^2*h^
2*q^2*e^2*log(d)^2/f^3 - 2*(f*x + e)*a*b*g^2*p*q/f - (f*x + e)^2*a*b*g*h*p*
q/f^2 - 2/9*(f*x + e)^3*a*b*h^2*p*q/f^3 + 4*(f*x + e)*a*b*g*h*p*q*e/f^2 + (
f*x + e)^2*a*b*h^2*p*q*e/f^3 + 2*(f*x + e)*a*b*h^2*p*q*e^2*log(f*x + e)/f^3
 - 2*(f*x + e)*b^2*h^2*p*q*e^2*log(c)/f^3 + (f*x + e)*b^2*g^2*log(c)^2/f +
(f*x + e)^2*b^2*g*h*log(c)^2/f^2 + 1/3*(f*x + e)^3*b^2*h^2*log(c)^2/f^3 - 2
*(f*x + e)*b^2*g*h*e*log(c)^2/f^2 - (f*x + e)^2*b^2*h^2*e*log(c)^2/f^3 + 2*
(f*x + e)*a*b*g^2*q*log(d)/f + 2*(f*x + e)^2*a*b*g*h*q*log(d)/f^2 + 2/3*(f*
x + e)^3*a*b*h^2*q*log(d)/f^3 - 4*(f*x + e)*a*b*g*h*q*e*log(d)/f^2 - 2*(f*x
 + e)^2*a*b*h^2*q*e*log(d)/f^3 + 2*(f*x + e)*b^2*h^2*q*e^2*log(c)*log(d)/f^
3 - 2*(f*x + e)*a*b*h^2*p*q*e^2/f^3 + 2*(f*x + e)*a*b*g^2*log(c)/f + 2*(f*x
 + e)^2*a*b*g*h*log(c)/f^2 + 2/3*(f*x + e)^3*a*b*h^2*log(c)/f^3 - 4*(f*x +
e)*a*b*g*h*e*log(c)/f^2 - 2*(f*x + e)^2*a*b*h^2*e*log(c)/f^3 + (f*x + e)*b^
2*h^2*e^2*log(c)^2/f^3 + 2*(f*x + e)*a*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a
^2*g^2/f + (f*x + e)^2*a^2*g*h/f^2 + 1/3*(f*x + e)^3*a^2*h^2/f^3 - 2*(f*x +
 e)*a^2*g*h*e/f^2 - (f*x + e)^2*a^2*h^2*e/f^3 + 2*(f*x + e)*a*b*h^2*e^2*log
(c)/f^3 + (f*x + e)*a^2*h^2*e^2/f^3
```

3.430 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=211

$$\frac{(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}-\frac{bhpq(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^2}+\frac{h(e+fx)^2\left(a+b\log\right.}{2f^2}$$

```
[Out] (-2*a*b*(f*g - e*h)*p*q*x)/f + (2*b^2*(f*g - e*h)*p^2*q^2*x)/f + (b^2*h*p^2
*q^2*(e + f*x)^2)/(4*f^2) - (2*b^2*(f*g - e*h)*p*q*(e + f*x)*Log[c*(d*(e +
f*x)^p)^q])/f^2 - (b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2
*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f^2 + (h
*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*f^2)
```

Rubi [A] time = 0.389334, antiderivative size = 211, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2445}

$$\frac{(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}-\frac{bhpq(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^2}+\frac{h(e+fx)^2\left(a+b\log\right.}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-2*a*b*(f*g - e*h)*p*q*x)/f + (2*b^2*(f*g - e*h)*p^2*q^2*x)/f + (b^2*h*p^2
*q^2*(e + f*x)^2)/(4*f^2) - (2*b^2*(f*g - e*h)*p*q*(e + f*x)*Log[c*(d*(e +
f*x)^p)^q])/f^2 - (b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2
*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f^2 + (h
*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*f^2)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{f}+\frac{h(e+fx)\left(a+b\log\left(c\right.\right.}{f}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int(e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^2 dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}+\frac{h(e+fx)^2\left(a+b\log\left(c\right.\right.}{2f^2}$$

$$= -\frac{2ab(fg-eh)pqx}{f}+\frac{b^2hp^2q^2(e+fx)^2}{4f^2}-\frac{bhpq(e+fx)^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{2f^2}$$

$$= -\frac{2ab(fg-eh)pqx}{f}+\frac{2b^2(fg-eh)p^2q^2x}{f}+\frac{b^2hp^2q^2(e+fx)^2}{4f^2}-\frac{2b^2(fg-e\ldots}{}$$

Mathematica [A] time = 0.0880622, size = 164, normalized size = 0.78

$$\frac{4(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2-8bpq(fg-eh)\left(fx(a-bpq)+b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+2h(e+\ldots}{4f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (4*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 2*h*(e + f*x)
^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 8*b*(f*g - e*h)*p*q*(f*(a - b*p*q)*
x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]) + b*h*p*q*(b*f*p*q*x*(2*e + f*x)
- 2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])))/(4*f^2)
```

Maple [F] time = 0.285, size = 0, normalized size = 0.

$$\int (hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 1.16868, size = 470, normalized size = 2.23

$$-2\,abfgpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^{2}}\right)-\frac{1}{2}\,abfhpq\left(\frac{2\,e^{2}\log\left(fx+e\right)}{f^{3}}+\frac{fx^{2}-2\,ex}{f^{2}}\right)+\frac{1}{2}\,b^{2}hx^{2}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+abhx^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*g*p*q*(x/f - e*log(f*x + e)/f^2) - 1/2*a*b*f*h*p*q*(2*e^2*log(f*x
+ e)/f^3 + (f*x^2 - 2*e*x)/f^2) + 1/2*b^2*h*x^2*log(((f*x + e)^p*d)^q*c)^2
+ a*b*h*x^2*log(((f*x + e)^p*d)^q*c) + b^2*g*x*log(((f*x + e)^p*d)^q*c)^2 +
 1/2*a^2*h*x^2 + 2*a*b*g*x*log(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log
(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*l
og(f*x + e))*p^2*q^2/f)*b^2*g - 1/4*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x
^2 - 2*e*x)/f^2)*log(((f*x + e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2
 - 6*e*f*x + 6*e^2*log(f*x + e))*p^2*q^2/f^2)*b^2*h + a^2*g*x
```

Fricas [B] time = 2.1887, size = 1320, normalized size = 6.26

$$\frac{\left(b^{2}f^{2}hp^{2}q^{2}-2\,abf^{2}hpq+2\,a^{2}f^{2}h\right)x^{2}+2\left(b^{2}f^{2}hp^{2}q^{2}x^{2}+2\,b^{2}f^{2}gp^{2}q^{2}x+\left(2\,b^{2}efg-b^{2}e^{2}h\right)p^{2}q^{2}\right)\log\left(fx+e\right)^{2}+2\left(b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] 1/4*((b^2*f^2*h*p^2*q^2 - 2*a*b*f^2*h*p*q + 2*a^2*f^2*h)*x^2 + 2*(b^2*f^2*h
*p^2*q^2*x^2 + 2*b^2*f^2*g*p^2*q^2*x + (2*b^2*e*f*g - b^2*e^2*h)*p^2*q^2)*l
```

```
og(f*x + e)^2 + 2*(b^2*f^2*h*x^2 + 2*b^2*f^2*g*x)*log(c)^2 + 2*(b^2*f^2*h*q
^2*x^2 + 2*b^2*f^2*g*q^2*x)*log(d)^2 + 2*(2*a^2*f^2*g + (4*b^2*f^2*g - 3*b^
2*e*f*h)*p^2*q^2 - 2*(2*a*b*f^2*g - a*b*e*f*h)*p*q)*x - 2*((4*b^2*e*f*g - 3
*b^2*e^2*h)*p^2*q^2 - 2*(2*a*b*e*f*g - a*b*e^2*h)*p*q + (b^2*f^2*h*p^2*q^2
- 2*a*b*f^2*h*p*q)*x^2 - 2*(2*a*b*f^2*g*p*q - (2*b^2*f^2*g - b^2*e*f*h)*p^2
*q^2)*x - 2*(b^2*f^2*h*p*q*x^2 + 2*b^2*f^2*g*p*q*x + (2*b^2*e*f*g - b^2*e^2
*h)*p*q)*log(c) - 2*(b^2*f^2*h*p*q^2*x^2 + 2*b^2*f^2*g*p*q^2*x + (2*b^2*e*f
*g - b^2*e^2*h)*p*q^2)*log(d))*log(f*x + e) - 2*((b^2*f^2*h*p*q - 2*a*b*f^2
*h)*x^2 - 2*(2*a*b*f^2*g - (2*b^2*f^2*g - b^2*e*f*h)*p*q)*x)*log(c) - 2*((b
^2*f^2*h*p*q^2 - 2*a*b*f^2*h*q)*x^2 - 2*(2*a*b*f^2*g*q - (2*b^2*f^2*g - b^2
*e*f*h)*p*q^2)*x - 2*(b^2*f^2*h*q*x^2 + 2*b^2*f^2*g*q*x)*log(c))*log(d))/f^
2
```

Sympy [A] time = 11.3038, size = 879, normalized size = 4.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*g*x + a**2*h*x**2/2 - a*b*e**2*h*p*q*log(e + f*x)/f**2 + 2*
a*b*e*g*p*q*log(e + f*x)/f + a*b*e*h*p*q*x/f + 2*a*b*g*p*q*x*log(e + f*x) -
 2*a*b*g*p*q*x + 2*a*b*g*q*x*log(d) + 2*a*b*g*x*log(c) + a*b*h*p*q*x**2*log
(e + f*x) - a*b*h*p*q*x**2/2 + a*b*h*q*x**2*log(d) + a*b*h*x**2*log(c) - b*
*2*e**2*h*p**2*q**2*log(e + f*x)**2/(2*f**2) + 3*b**2*e**2*h*p**2*q**2*log(
e + f*x)/(2*f**2) - b**2*e**2*h*p*q**2*log(d)*log(e + f*x)/f**2 - b**2*e**2
*h*p*q*log(c)*log(e + f*x)/f**2 + b**2*e*g*p**2*q**2*log(e + f*x)**2/f - 2*
b**2*e*g*p**2*q**2*log(e + f*x)/f + 2*b**2*e*g*p*q**2*log(d)*log(e + f*x)/f
 + 2*b**2*e*g*p*q*log(c)*log(e + f*x)/f + b**2*e*h*p**2*q**2*x*log(e + f*x)
/f - 3*b**2*e*h*p**2*q**2*x/(2*f) + b**2*e*h*p*q**2*x*log(d)/f + b**2*e*h*p
*q*x*log(c)/f + b**2*g*p**2*q**2*x*log(e + f*x)**2 - 2*b**2*g*p**2*q**2*x*l
og(e + f*x) + 2*b**2*g*p**2*q**2*x + 2*b**2*g*p*q**2*x*log(d)*log(e + f*x)
- 2*b**2*g*p*q**2*x*log(d) + 2*b**2*g*p*q*x*log(c)*log(e + f*x) - 2*b**2*g*
p*q*x*log(c) + b**2*g*q**2*x*log(d)**2 + 2*b**2*g*q*x*log(c)*log(d) + b**2*
g*x*log(c)**2 + b**2*h*p**2*q**2*x**2*log(e + f*x)**2/2 - b**2*h*p**2*q**2*
x**2*log(e + f*x)/2 + b**2*h*p**2*q**2*x**2/4 + b**2*h*p*q**2*x**2*log(d)*l
og(e + f*x) - b**2*h*p*q**2*x**2*log(d)/2 + b**2*h*p*q*x**2*log(c)*log(e +
f*x) - b**2*h*p*q*x**2*log(c)/2 + b**2*h*q**2*x**2*log(d)**2/2 + b**2*h*q*x
**2*log(c)*log(d) + b**2*h*x**2*log(c)**2/2, Ne(f, 0)), ((a + b*log(c*(d*e*
*p)**q))**2*(g*x + h*x**2/2), True))
```

Giac [B] time = 1.29273, size = 1369, normalized size = 6.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*g*p^2*q^2*log(f*x + e)^2/f + 1/2*(f*x + e)^2*b^2*h*p^2*q^2*lo
g(f*x + e)^2/f^2 - (f*x + e)*b^2*h*p^2*q^2*e*log(f*x + e)^2/f^2 - 2*(f*x +
e)*b^2*g*p^2*q^2*log(f*x + e)/f - 1/2*(f*x + e)^2*b^2*h*p^2*q^2*log(f*x + e
)/f^2 + 2*(f*x + e)*b^2*h*p^2*q^2*e*log(f*x + e)/f^2 + 2*(f*x + e)*b^2*g*p*
```

```
q^2*log(f*x + e)*log(d)/f + (f*x + e)^2*b^2*h*p*q^2*log(f*x + e)*log(d)/f^2
 - 2*(f*x + e)*b^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)*b^2*g*p^
2*q^2/f + 1/4*(f*x + e)^2*b^2*h*p^2*q^2/f^2 - 2*(f*x + e)*b^2*h*p^2*q^2*e/f
^2 + 2*(f*x + e)*b^2*g*p*q*log(f*x + e)*log(c)/f + (f*x + e)^2*b^2*h*p*q*lo
g(f*x + e)*log(c)/f^2 - 2*(f*x + e)*b^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 2
*(f*x + e)*b^2*g*p*q^2*log(d)/f - 1/2*(f*x + e)^2*b^2*h*p*q^2*log(d)/f^2 +
2*(f*x + e)*b^2*h*p*q^2*e*log(d)/f^2 + (f*x + e)*b^2*g*q^2*log(d)^2/f + 1/2
*(f*x + e)^2*b^2*h*q^2*log(d)^2/f^2 - (f*x + e)*b^2*h*q^2*e*log(d)^2/f^2 +
2*(f*x + e)*a*b*g*p*q*log(f*x + e)/f + (f*x + e)^2*a*b*h*p*q*log(f*x + e)/f
^2 - 2*(f*x + e)*a*b*h*p*q*e*log(f*x + e)/f^2 - 2*(f*x + e)*b^2*g*p*q*log(c
)/f - 1/2*(f*x + e)^2*b^2*h*p*q*log(c)/f^2 + 2*(f*x + e)*b^2*h*p*q*e*log(c)
/f^2 + 2*(f*x + e)*b^2*g*q*log(c)*log(d)/f + (f*x + e)^2*b^2*h*q*log(c)*log
(d)/f^2 - 2*(f*x + e)*b^2*h*q*e*log(c)*log(d)/f^2 - 2*(f*x + e)*a*b*g*p*q/f
 - 1/2*(f*x + e)^2*a*b*h*p*q/f^2 + 2*(f*x + e)*a*b*h*p*q*e/f^2 + (f*x + e)*
b^2*g*log(c)^2/f + 1/2*(f*x + e)^2*b^2*h*log(c)^2/f^2 - (f*x + e)*b^2*h*e*l
og(c)^2/f^2 + 2*(f*x + e)*a*b*g*q*log(d)/f + (f*x + e)^2*a*b*h*q*log(d)/f^2
 - 2*(f*x + e)*a*b*h*q*e*log(d)/f^2 + 2*(f*x + e)*a*b*g*log(c)/f + (f*x + e
)^2*a*b*h*log(c)/f^2 - 2*(f*x + e)*a*b*h*e*log(c)/f^2 + (f*x + e)*a^2*g/f +
 1/2*(f*x + e)^2*a^2*h/f^2 - (f*x + e)*a^2*h*e/f^2
```

3.431 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=78

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-2abpqx-\frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+2b^2p^2q^2x$$

```
[Out] -2*a*b*p*q*x + 2*b^2*p^2*q^2*x - (2*b^2*p*q*(e + f*x)*Log[c*(d*(e + f*x)^p)
^q])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
```

Rubi [A] time = 0.0963122, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2296, 2295, 2445}

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-2abpqx-\frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}+2b^2p^2q^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] -2*a*b*p*q*x + 2*b^2*p^2*q^2*x - (2*b^2*p*q*(e + f*x)*Log[c*(d*(e + f*x)^p)
^q])/f + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^qx^{pq}\right)\right)^2 dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int (a+b\log(cd\right.}{f}\right.$$
$$= -2abpqx + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \text{Subst}\left(\frac{(2b^2pq)\,\text{Subst}\left(\int\right.}{}\right.$$
$$= -2abpqx + 2b^2p^2q^2x - \frac{2b^2pq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} + \frac{(e+fx)\left(a+b\log\right.}{}$$

Mathematica [A] time = 0.0156952, size = 69, normalized size = 0.88

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - 2bpq\left(ax + \frac{b(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} - bpqx\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f - 2*b*p*q*(a*x - b*p*q*x +
 (b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f)
```

Maple [F] time = 0.279, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 1.14768, size = 200, normalized size = 2.56

$$-2\,abfpq\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right) + b^2x\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2 + 2\,abx\log\left(\left(\left(fx+e\right)^pd\right)^qc\right) - \left(2\,fpq\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -2*a*b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b^2*x*log(((f*x + e)^p*d)^q*c)^2
+ 2*a*b*x*log(((f*x + e)^p*d)^q*c) - (2*f*p*q*(x/f - e*log(f*x + e)/f^2)*lo
g(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*
q^2/f)*b^2 + a^2*x
```

Fricas [B] time = 1.90963, size = 516, normalized size = 6.62

$$\frac{b^2fq^2x\log(d)^2 + b^2fx\log(c)^2 + \left(b^2fp^2q^2x + b^2ep^2q^2\right)\log\left(fx+e\right)^2 - 2\left(b^2fpq - abf\right)x\log(c) + \left(2\,b^2fp^2q^2 - 2\,abfpq + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (b^2*f*q^2*x*log(d)^2 + b^2*f*x*log(c)^2 + (b^2*f*p^2*q^2*x + b^2*e*p^2*q^2
)*log(f*x + e)^2 - 2*(b^2*f*p*q - a*b*f)*x*log(c) + (2*b^2*f*p^2*q^2 - 2*a*
b*f*p*q + a^2*f)*x - 2*(b^2*e*p^2*q^2 - a*b*e*p*q + (b^2*f*p^2*q^2 - a*b*f*
p*q)*x - (b^2*f*p*q*x + b^2*e*p*q)*log(c) - (b^2*f*p*q^2*x + b^2*e*p*q^2)*l
og(d))*log(f*x + e) + 2*(b^2*f*q*x*log(c) - (b^2*f*p*q^2 - a*b*f*q)*x)*log(
d))/f
```

Sympy [A] time = 3.27804, size = 343, normalized size = 4.4

$$\begin{cases} a^2x + \frac{2abepq\log\left(e+fx\right)}{f} + 2abpqx\log\left(e+fx\right) - 2abpqx + 2abqx\log(d) + 2abx\log(c) + \frac{b^2ep^2q^2\log\left(e+fx\right)^2}{f} - \frac{2b^2ep^2q^2\log\left(e+fx\right)}{f} \\ x\left(a + b\log\left(c\left(de^p\right)^q\right)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*e*p*q*log(e + f*x)/f + 2*a*b*p*q*x*log(e + f*x) -
 2*a*b*p*q*x + 2*a*b*q*x*log(d) + 2*a*b*x*log(c) + b**2*e*p**2*q**2*log(e +
 f*x)**2/f - 2*b**2*e*p**2*q**2*log(e + f*x)/f + 2*b**2*e*p*q**2*log(d)*log
(e + f*x)/f + 2*b**2*e*p*q*log(c)*log(e + f*x)/f + b**2*p**2*q**2*x*log(e +
 f*x)**2 - 2*b**2*p**2*q**2*x*log(e + f*x) + 2*b**2*p**2*q**2*x + 2*b**2*p*
q**2*x*log(d)*log(e + f*x) - 2*b**2*p*q**2*x*log(d) + 2*b**2*p*q*x*log(c)*l
og(e + f*x) - 2*b**2*p*q*x*log(c) + b**2*q**2*x*log(d)**2 + 2*b**2*q*x*log(
c)*log(d) + b**2*x*log(c)**2, Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**2,
True))
```

Giac [B] time = 1.26098, size = 409, normalized size = 5.24

$$\frac{\left(fx+e\right)b^2p^2q^2\log\left(fx+e\right)^2}{f} - \frac{2\left(fx+e\right)b^2p^2q^2\log\left(fx+e\right)}{f} + \frac{2\left(fx+e\right)b^2pq^2\log\left(fx+e\right)\log(d)}{f} + \frac{2\left(fx+e\right)b^2p^2q^2}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^2*p^2*q^2*log(f*x + e)^2/f - 2*(f*x + e)*b^2*p^2*q^2*log(f*x +
e)/f + 2*(f*x + e)*b^2*p*q^2*log(f*x + e)*log(d)/f + 2*(f*x + e)*b^2*p^2*q^
```

```
2/f + 2*(f*x + e)*b^2*p*q*log(f*x + e)*log(c)/f - 2*(f*x + e)*b^2*p*q^2*log
(d)/f + (f*x + e)*b^2*q^2*log(d)^2/f + 2*(f*x + e)*a*b*p*q*log(f*x + e)/f -
 2*(f*x + e)*b^2*p*q*log(c)/f + 2*(f*x + e)*b^2*q*log(c)*log(d)/f - 2*(f*x
+ e)*a*b*p*q/f + (f*x + e)*b^2*log(c)^2/f + 2*(f*x + e)*a*b*q*log(d)/f + 2*
(f*x + e)*a*b*log(c)/f + (f*x + e)*a^2/f
```

3.432 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=123

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d\right.\right.\right.}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rubi [A] time = 0.265072, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d\right.\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```


```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```


Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx\right.\right.}{e+f}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int \frac{(a+b\log(c}{}\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Mathematica [B] time = 0.164413, size = 324, normalized size = 2.63

$$\frac{2bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 2b^2p^2q^2\text{PolyLog}\left(3,\frac{h(e+fx)}{eh-fg}\right) + a^2\log(g+hx) + 2ab\log(g+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
+ 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g)
```

```
+ e*h)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F] time = 0.697, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)

[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^{2}\log\left(hx+g\right)}{h}+\int \frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2}+\left(\log\left(c\right)^{2}+2\,\log\left(c\right)\log\left(d^{q}\right)+\log\left(d^{q}\right)^{2}\right)b^{2}+2\,ab(\log\left(c\right)+\log\left(d^{q}\right))+2\left(b^{2}\right.}{hx+g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxima")

[Out] a^2*log(h*x + g)/h + integrate((b^2*log(((f*x + e)^p)^q)^2 + (log(c)^2 + 2*
log(c)*log(d^q) + log(d^q)^2)*b^2 + 2*a*b*(log(c) + log(d^q)) + 2*(b^2*(log
(c) + log(d^q)) + a*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\,ab\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a^{2}}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fricas")

[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{2}}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

3.433 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^2}\,dx$

Optimal. Leaf size=144

$$-\frac{2b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{2bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(fg-eh)}$$

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*g - e*h)*(g + h*x)) - (2
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(
h*(f*g - e*h)) - (2*b^2*f*p^2*q^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])
/(h*(f*g - e*h))
```

Rubi [A] time = 0.200409, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2397, 2394, 2393, 2391, 2445}

$$-\frac{2b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{2bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*g - e*h)*(g + h*x)) - (2
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(
h*(f*g - e*h)) - (2*b^2*f*p^2*q^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])
/(h*(f*g - e*h))
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(2bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx}{fg-eh}\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \frac{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \frac{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(fg-eh)(g+hx)} - \frac{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log}{h(fg-eh)}$$

Mathematica [A] time = 0.229298, size = 200, normalized size = 1.39

$$\frac{2b^2fp^2q^2(g+hx)\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right) - 2bfpq(g+hx)\log(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) + \left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h(g+hx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^2,x]
```

```
[Out] (b^2*f*p^2*q^2*(g + h*x)*Log[e + f*x]^2 - 2*b*f*p*q*(g + h*x)*Log[e + f*x]*
(a + b*Log[c*(d*(e + f*x)^p)^q]) + (a + b*Log[c*(d*(e + f*x)^p)^q])*(a*(f*g
 - e*h) + b*(f*g - e*h)*Log[c*(d*(e + f*x)^p)^q] + 2*b*f*p*q*(g + h*x)*Log[
(f*(g + h*x))/(f*g - e*h)]) + 2*b^2*f*p^2*q^2*(g + h*x)*PolyLog[2, (h*(e +
f*x))/(-(f*g) + e*h)])/(h*(-(f*g) + e*h)*(g + h*x))
```

Maple [F] time = 0.661, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,abfpq\left(\frac{\log\left(fx+e\right)}{fgh-eh^2}-\frac{\log\left(hx+g\right)}{fgh-eh^2}\right)-b^2\left(\frac{\log\left(\left(\left(fx+e\right)^p\right)^q\right)^2}{h^2x+gh}-\int\frac{eh\log\left(c\right)^2+2\,eh\log\left(c\right)\log\left(d^q\right)+eh\log\left(d^q\right)^2+\left(f\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 2*a*b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2)) -
 b^2*(log(((f*x + e)^p)^q)^2/(h^2*x + g*h) - integrate((e*h*log(c)^2 + 2*e*
h*log(c)*log(d^q) + e*h*log(d^q)^2 + (f*h*log(c)^2 + 2*f*h*log(c)*log(d^q)
+ f*h*log(d^q)^2)*x + 2*(f*g*p*q + e*h*log(c) + e*h*log(d^q) + (f*h*p*q + f
*h*log(c) + f*h*log(d^q))*x)*log(((f*x + e)^p)^q))/(f*h^3*x^3 + e*g^2*h + (
2*f*g*h^2 + e*h^3)*x^2 + (f*g^2*h + 2*e*g*h^2)*x), x)) - 2*a*b*log(((f*x +
e)^p*d)^q*c)/(h^2*x + g*h) - a^2/(h^2*x + g*h)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a^2}{h^2x^2+2\,ghx+g^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2}{\left(g+hx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^2, x)
```

3.434 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^3}\,dx$

Optimal. Leaf size=222

$$\frac{b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{fg-eh}{h(e+fx)}\right)}{h(fg-eh)^2}-\frac{bf^2pq\log\left(\frac{fg-eh}{h(e+fx)}+1\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}-\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e\right.\right.\right.}{(g+hx)(fg-eh)^2}$$

```
[Out] -((b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((f*g - e*h)^2*(g +
h*x))) - (a + b*Log[c*(d*(e + f*x)^p)^q])^2/(2*h*(g + h*x)^2) + (b^2*f^2*p^
2*q^2*Log[g + h*x])/(h*(f*g - e*h)^2) - (b*f^2*p*q*(a + b*Log[c*(d*(e + f*x
)^p)^q])*Log[1 + (f*g - e*h)/(h*(e + f*x))])/(h*(f*g - e*h)^2) + (b^2*f^2*p
^2*q^2*PolyLog[2, -((f*g - e*h)/(h*(e + f*x)))])/(h*(f*g - e*h)^2)
```

Rubi [A] time = 0.816803, antiderivative size = 257, normalized size of antiderivative = 1.16, number of steps used = 10, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2398, 2411, 2347, 2344, 2301, 2317, 2391, 2314, 31, 2445}

$$-\frac{b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)^2}+\frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(fg-eh)^2}-\frac{bf^2pq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^3,x]
```

```
[Out] -((b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((f*g - e*h)^2*(g +
h*x))) + (f^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*h*(f*g - e*h)^2) - (a
+ b*Log[c*(d*(e + f*x)^p)^q])^2/(2*h*(g + h*x)^2) + (b^2*f^2*p^2*q^2*Log[g
+ h*x])/(h*(f*g - e*h)^2) - (b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log
[(f*(g + h*x))/(f*g - e*h)])/(h*(f*g - e*h)^2) - (b^2*f^2*p^2*q^2*PolyLog[2
, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)^2)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
```

```
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2314

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_), x
_Symbol] :> Simp[(x*(d + e*x^r)^(q + 1)*(a + b*Log[c*x^n]))/d, x] - Dist[(b
*n)/d, Int[(d + e*x^r)^(q + 1), x], x] /; FreeQ[{a, b, c, d, e, n, q, r}, x
] && EqQ[r*(q + 1) + 1, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^2}\,dx}{h}, cd^q(e+f\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} + \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\,dx, x, e+f\right.}{h}\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\,dx, x, e+f\right.}{fg-eh}\right.$$

$$= -\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fg-eh)^2(g+hx)} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(g+hx)^2} - \text{Sul}$$

$$= -\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(fg-eh)^2} -$$

$$= -\frac{bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2h(fg-eh)^2} -$$

Mathematica [A] time = 0.527637, size = 316, normalized size = 1.42

$$-\frac{\frac{b^2p^2q^2\left(2f^2(g+hx)^2\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)-2f^2(g+hx)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)+h(e+fx)\log^2(e+fx)(eh-f(2g+hx))+2f(g+hx)\log(e+fx)\left(f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+h(e+fx)\right)\right)}{(fg-eh)^2}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^3,x]
```

```
[Out] -((a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + (2*b*p*q*(a - b
*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(h*(e + f*x)*(e*h - f*(2*g
+ h*x))*Log[e + f*x] + f*(g + h*x)*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g + h
*x))/(f*g - e*h)])))/(f*g - e*h)^2 + (b^2*p^2*q^2*(h*(e + f*x)*(e*h - f*(2*
g + h*x))*Log[e + f*x]^2 - 2*f^2*(g + h*x)^2*Log[(f*(g + h*x))/(f*g - e*h)]
 + 2*f*(g + h*x)*Log[e + f*x]*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g + h*x))/
(f*g - e*h)]) + 2*f^2*(g + h*x)^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])
)/(f*g - e*h)^2)/(2*h*(g + h*x)^2)
```

Maple [F] time = 0.678, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$abfpq\left(\frac{f\log\left(fx+e\right)}{f^{2}g^{2}h-2\,efgh^{2}+e^{2}h^{3}}-\frac{f\log\left(hx+g\right)}{f^{2}g^{2}h-2\,efgh^{2}+e^{2}h^{3}}+\frac{1}{fg^{2}h-egh^{2}+\left(fgh^{2}-eh^{3}\right)x}\right)-\frac{1}{2}\,b^{2}\left(\frac{\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2}}{h^{3}x^{2}+2\,gh^{2}x+g^{2}h}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] a*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) - f*log(h*x +
 g)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) + 1/(f*g^2*h - e*g*h^2 + (f*g*h^2 -
 e*h^3)*x)) - 1/2*b^2*(log(((f*x + e)^p)^q)^2/(h^3*x^2 + 2*g*h^2*x + g^2*h)
 - 2*integrate((e*h*log(c)^2 + 2*e*h*log(c)*log(d^q) + e*h*log(d^q)^2 + (f*
h*log(c)^2 + 2*f*h*log(c)*log(d^q) + f*h*log(d^q)^2)*x + (f*g*p*q + 2*e*h*l
og(c) + 2*e*h*log(d^q) + (f*h*p*q + 2*f*h*log(c) + 2*f*h*log(d^q))*x)*log((
(f*x + e)^p)^q))/(f*h^4*x^4 + e*g^3*h + (3*f*g*h^3 + e*h^4)*x^3 + 3*(f*g^2*
h^2 + e*g*h^3)*x^2 + (f*g^3*h + 3*e*g^2*h^2)*x), x)) - a*b*log(((f*x + e)^p
*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h) - 1/2*a^2/(h^3*x^2 + 2*g*h^2*x + g^2
*h)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\,ab\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a^{2}}{h^{3}x^{3}+3\,gh^{2}x^{2}+3\,g^{2}hx+g^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h^3*x^3 + 3*g*h^2*x^2 + 3*g^2*h*x + g^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{\left(hx+g\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^3, x)
```

3.435 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 dx$

Optimal. Leaf size=492

$$\frac{3b^2hp^2q^2(e+fx)^2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9f^3}+\frac{6ab^2p^2}{}$$

```
[Out] (6*a*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 - (6*b^3*(f*g - e*h)^2*p^3*q^3*x)/f^2
 - (3*b^3*h*(f*g - e*h)*p^3*q^3*(e + f*x)^2)/(4*f^3) - (2*b^3*h^2*p^3*q^3*(
e + f*x)^3)/(27*f^3) + (6*b^3*(f*g - e*h)^2*p^2*q^2*(e + f*x)*Log[c*(d*(e +
 f*x)^p)^q])/f^3 + (3*b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(9*f^3) - (3*b*(f*g - e*h)^2*p*q*(e + f*x)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/f^3 - (3*b*h*(f*g - e*h)*p*q*(e + f*x)^2*(a + b*Log[
c*(d*(e + f*x)^p)^q])^2)/(2*f^3) - (b*h^2*p*q*(e + f*x)^3*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/(3*f^3) + ((f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e +
f*x)^p)^q])^3)/f^3 + (h*(f*g - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^3)/f^3 + (h^2*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(3*f^3)
```

Rubi [A] time = 0.94834, antiderivative size = 492, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2445}

$$\frac{3b^2hp^2q^2(e+fx)^2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2f^3}+\frac{2b^2h^2p^2q^2(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9f^3}+\frac{6ab^2p^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```



```
[Out] (6*a*b^2*(f*g - e*h)^2*p^2*q^2*x)/f^2 - (6*b^3*(f*g - e*h)^2*p^3*q^3*x)/f^2
 - (3*b^3*h*(f*g - e*h)*p^3*q^3*(e + f*x)^2)/(4*f^3) - (2*b^3*h^2*p^3*q^3*(
e + f*x)^3)/(27*f^3) + (6*b^3*(f*g - e*h)^2*p^2*q^2*(e + f*x)*Log[c*(d*(e +
 f*x)^p)^q])/f^3 + (3*b^2*h*(f*g - e*h)*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(2*f^3) + (2*b^2*h^2*p^2*q^2*(e + f*x)^3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(9*f^3) - (3*b*(f*g - e*h)^2*p*q*(e + f*x)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/f^3 - (3*b*h*(f*g - e*h)*p*q*(e + f*x)^2*(a + b*Log[
c*(d*(e + f*x)^p)^q])^2)/(2*f^3) - (b*h^2*p*q*(e + f*x)^3*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/(3*f^3) + ((f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e +
f*x)^p)^q])^3)/f^3 + (h*(f*g - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^3)/f^3 + (h^2*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(3*f^3)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 dx, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{f^2} + \frac{2h(fg-eh)(e+}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2 \int (e+fx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 dx}{f^2}, cd^q(e+fx)^{pq}, c\right.$$

$$= \text{Subst}\left(\frac{h^2 \text{Subst}\left(\int x^2 \left(a+b\log\left(cd^q x^{pq}\right)\right)^3 dx, x, e+fx\right)}{f^3}, cd^q(e+fx)\right.$$

$$= \frac{(fg-eh)^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f^3} + \frac{h(fg-eh)(e+fx)}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^3} - \frac{3bh(fg-eh}{}$$

$$= \frac{6ab^2(fg-eh)^2p^2q^2x}{f^2} - \frac{3b^3h(fg-eh)p^3q^3(e+fx)^2}{4f^3} - \frac{2b^3h^2p^3q^3(e+f}{27f^3}$$

$$= \frac{6ab^2(fg-eh)^2p^2q^2x}{f^2} - \frac{6b^3(fg-eh)^2p^3q^3x}{f^2} - \frac{3b^3h(fg-eh)p^3q^3(e+f}{4f^3}$$

Mathematica [A] time = 0.27518, size = 378, normalized size = 0.77

$$\frac{-4bh^2pq\left(2bpq\left(bfpqx\left(3e^2+3efx+f^2x^2\right)-3(e+fx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\right)+9(e+fx)^3\left(a+b\log\left(c\left(d(e\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (108*(f*g - e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 108*h*(f*
g - e*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 36*h^2*(e + f*x)^
3*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 324*b*(f*g - e*h)^2*p*q*((e + f*x)*(
a + b*Log[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*
Log[c*(d*(e + f*x)^p)^q])) - 81*b*h*(f*g - e*h)*p*q*(2*(e + f*x)^2*(a + b*L
og[c*(d*(e + f*x)^p)^q])^2 + b*p*q*(b*f*p*q*x*(2*e + f*x) - 2*(e + f*x)^2*(
a + b*Log[c*(d*(e + f*x)^p)^q]))) - 4*b*h^2*p*q*(9*(e + f*x)^3*(a + b*Log[c
*(d*(e + f*x)^p)^q])^2 + 2*b*p*q*(b*f*p*q*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 3
*(e + f*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))))/(108*f^3)
```

Maple [F] time = 0.507, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^2 \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [B] time = 1.41119, size = 1681, normalized size = 3.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*h^2*x^3*log(((f*x + e)^p*d)^q*c)^3 + a*b^2*h^2*x^3*log(((f*x + e)^p
*d)^q*c)^2 + b^3*g*h*x^2*log(((f*x + e)^p*d)^q*c)^3 - 3*a^2*b*f*g^2*p*q*(x/
f - e*log(f*x + e)/f^2) + 1/6*a^2*b*f*h^2*p*q*(6*e^3*log(f*x + e)/f^4 - (2*
f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3) - 3/2*a^2*b*f*g*h*p*q*(2*e^2*log(f*x +
e)/f^3 + (f*x^2 - 2*e*x)/f^2) + a^2*b*h^2*x^3*log(((f*x + e)^p*d)^q*c) + 3*
a*b^2*g*h*x^2*log(((f*x + e)^p*d)^q*c)^2 + b^3*g^2*x*log(((f*x + e)^p*d)^q*
c)^3 + 1/3*a^3*h^2*x^3 + 3*a^2*b*g*h*x^2*log(((f*x + e)^p*d)^q*c) + 3*a*b^2
*g^2*x*log(((f*x + e)^p*d)^q*c)^2 + a^3*g*h*x^2 + 3*a^2*b*g^2*x*log(((f*x +
 e)^p*d)^q*c) - 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q
*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2*g^2 -
(3*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*
x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(
e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f
^2)*f*p*q)*b^3*g^2 - 3/2*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)
/f^2)*log(((f*x + e)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x
+ 6*e^2*log(f*x + e))*p^2*q^2/f^2)*a*b^2*g*h - 1/4*(6*f*p*q*(2*e^2*log(f*x
+ e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x + e)^p*d)^q*c)^2 + ((4*e^2*log(f*
x + e)^3 + 3*f^2*x^2 + 18*e^2*log(f*x + e)^2 - 42*e*f*x + 42*e^2*log(f*x +
e))*p^2*q^2/f^3 - 6*(f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f
*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^3)*f*p*q)*b^3*g*h + 1/18*(6*f*p*q*(
6*e^3*log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x +
 e)^p*d)^q*c) + (4*f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*
f*x - 66*e^3*log(f*x + e))*p^2*q^2/f^3)*a*b^2*h^2 + 1/108*(18*f*p*q*(6*e^3*
log(f*x + e)/f^4 - (2*f^2*x^3 - 3*e*f*x^2 + 6*e^2*x)/f^3)*log(((f*x + e)^p*
d)^q*c)^2 - f*p*q*((8*f^3*x^3 - 36*e^3*log(f*x + e)^3 - 57*e*f^2*x^2 - 198*
e^3*log(f*x + e)^2 + 510*e^2*f*x - 510*e^3*log(f*x + e))*p^2*q^2/f^4 - 6*(4
*f^3*x^3 - 15*e*f^2*x^2 - 18*e^3*log(f*x + e)^2 + 66*e^2*f*x - 66*e^3*log(f
*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^4))*b^3*h^2 + a^3*g^2*x
```

Fricas [B] time = 3.12716, size = 6372, normalized size = 12.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] -1/108*(4*(2*b^3*f^3*h^2*p^3*q^3 - 6*a*b^2*f^3*h^2*p^2*q^2 + 9*a^2*b*f^3*h^
2*p*q - 9*a^3*f^3*h^2)*x^3 - 36*(b^3*f^3*h^2*p^3*q^3*x^3 + 3*b^3*f^3*g*h*p^
3*q^3*x^2 + 3*b^3*f^3*g^2*p^3*q^3*x + (3*b^3*e*f^2*g^2 - 3*b^3*e^2*f*g*h +
b^3*e^3*h^2)*p^3*q^3)*log(f*x + e)^3 - 36*(b^3*f^3*h^2*x^3 + 3*b^3*f^3*g*h*
x^2 + 3*b^3*f^3*g^2*x)*log(c)^3 - 36*(b^3*f^3*h^2*q^3*x^3 + 3*b^3*f^3*g*h*q
^3*x^2 + 3*b^3*f^3*g^2*q^3*x)*log(d)^3 - 3*(36*a^3*f^3*g*h - (27*b^3*f^3*g*
h - 19*b^3*e*f^2*h^2)*p^3*q^3 + 6*(9*a*b^2*f^3*g*h - 5*a*b^2*e*f^2*h^2)*p^2
*q^2 - 18*(3*a^2*b*f^3*g*h - a^2*b*e*f^2*h^2)*p*q)*x^2 + 18*((18*b^3*e*f^2*
```

```
g^2 - 27*b^3*e^2*f*g*h + 11*b^3*e^3*h^2)*p^3*q^3 - 6*(3*a*b^2*e*f^2*g^2 - 3
*a*b^2*e^2*f*g*h + a*b^2*e^3*h^2)*p^2*q^2 + 2*(b^3*f^3*h^2*p^3*q^3 - 3*a*b^
2*f^3*h^2*p^2*q^2)*x^3 - 3*(6*a*b^2*f^3*g*h*p^2*q^2 - (3*b^3*f^3*g*h - b^3*
e*f^2*h^2)*p^3*q^3)*x^2 - 6*(3*a*b^2*f^3*g^2*p^2*q^2 - (3*b^3*f^3*g^2 - 3*b
^3*e*f^2*g*h + b^3*e^2*f*h^2)*p^3*q^3)*x - 6*(b^3*f^3*h^2*p^2*q^2*x^3 + 3*b
^3*f^3*g*h*p^2*q^2*x^2 + 3*b^3*f^3*g^2*p^2*q^2*x + (3*b^3*e*f^2*g^2 - 3*b^3
*e^2*f*g*h + b^3*e^3*h^2)*p^2*q^2)*log(c) - 6*(b^3*f^3*h^2*p^2*q^3*x^3 + 3*
b^3*f^3*g*h*p^2*q^3*x^2 + 3*b^3*f^3*g^2*p^2*q^3*x + (3*b^3*e*f^2*g^2 - 3*b^
3*e^2*f*g*h + b^3*e^3*h^2)*p^2*q^3)*log(d))*log(f*x + e)^2 + 18*(2*(b^3*f^3
*h^2*p*q - 3*a*b^2*f^3*h^2)*x^3 - 3*(6*a*b^2*f^3*g*h - (3*b^3*f^3*g*h - b^3
*e*f^2*h^2)*p*q)*x^2 - 6*(3*a*b^2*f^3*g^2 - (3*b^3*f^3*g^2 - 3*b^3*e*f^2*g*
h + b^3*e^2*f*h^2)*p*q)*x)*log(c)^2 + 18*(2*(b^3*f^3*h^2*p*q^3 - 3*a*b^2*f^
3*h^2*q^2)*x^3 - 3*(6*a*b^2*f^3*g*h*q^2 - (3*b^3*f^3*g*h - b^3*e*f^2*h^2)*p
*q^3)*x^2 - 6*(3*a*b^2*f^3*g^2*q^2 - (3*b^3*f^3*g^2 - 3*b^3*e*f^2*g*h + b^3
*e^2*f*h^2)*p*q^3)*x - 6*(b^3*f^3*h^2*q^2*x^3 + 3*b^3*f^3*g*h*q^2*x^2 + 3*b
^3*f^3*g^2*q^2*x)*log(c))*log(d)^2 - 6*(18*a^3*f^3*g^2 - (108*b^3*f^3*g^2 -
 189*b^3*e*f^2*g*h + 85*b^3*e^2*f*h^2)*p^3*q^3 + 6*(18*a*b^2*f^3*g^2 - 27*a
*b^2*e*f^2*g*h + 11*a*b^2*e^2*f*h^2)*p^2*q^2 - 18*(3*a^2*b*f^3*g^2 - 3*a^2*
b*e*f^2*g*h + a^2*b*e^2*f*h^2)*p*q)*x - 6*((108*b^3*e*f^2*g^2 - 189*b^3*e^2
*f*g*h + 85*b^3*e^3*h^2)*p^3*q^3 - 6*(18*a*b^2*e*f^2*g^2 - 27*a*b^2*e^2*f*g
*h + 11*a*b^2*e^3*h^2)*p^2*q^2 + 2*(2*b^3*f^3*h^2*p^3*q^3 - 6*a*b^2*f^3*h^2
*p^2*q^2 + 9*a^2*b*f^3*h^2*p*q)*x^3 + 18*(3*a^2*b*e*f^2*g^2 - 3*a^2*b*e^2*f
*g*h + a^2*b*e^3*h^2)*p*q + 3*(18*a^2*b*f^3*g*h*p*q + (9*b^3*f^3*g*h - 5*b^
3*e*f^2*h^2)*p^3*q^3 - 6*(3*a*b^2*f^3*g*h - a*b^2*e*f^2*h^2)*p^2*q^2)*x^2 +
 18*(b^3*f^3*h^2*p*q*x^3 + 3*b^3*f^3*g*h*p*q*x^2 + 3*b^3*f^3*g^2*p*q*x + (3
*b^3*e*f^2*g^2 - 3*b^3*e^2*f*g*h + b^3*e^3*h^2)*p*q)*log(c)^2 + 18*(b^3*f^3
*h^2*p*q^3*x^3 + 3*b^3*f^3*g*h*p*q^3*x^2 + 3*b^3*f^3*g^2*p*q^3*x + (3*b^3*e
*f^2*g^2 - 3*b^3*e^2*f*g*h + b^3*e^3*h^2)*p*q^3)*log(d)^2 + 6*(9*a^2*b*f^3*
g^2*p*q + (18*b^3*f^3*g^2 - 27*b^3*e*f^2*g*h + 11*b^3*e^2*f*h^2)*p^3*q^3 -
6*(3*a*b^2*f^3*g^2 - 3*a*b^2*e*f^2*g*h + a*b^2*e^2*f*h^2)*p^2*q^2)*x - 6*((
18*b^3*e*f^2*g^2 - 27*b^3*e^2*f*g*h + 11*b^3*e^3*h^2)*p^2*q^2 + 2*(b^3*f^3*
h^2*p^2*q^2 - 3*a*b^2*f^3*h^2*p*q)*x^3 - 6*(3*a*b^2*e*f^2*g^2 - 3*a*b^2*e^2
*f*g*h + a*b^2*e^3*h^2)*p*q - 3*(6*a*b^2*f^3*g*h*p*q - (3*b^3*f^3*g*h - b^3
*e*f^2*h^2)*p^2*q^2)*x^2 - 6*(3*a*b^2*f^3*g^2*p*q - (3*b^3*f^3*g^2 - 3*b^3*
e*f^2*g*h + b^3*e^2*f*h^2)*p^2*q^2)*x)*log(c) - 6*((18*b^3*e*f^2*g^2 - 27*b
^3*e^2*f*g*h + 11*b^3*e^3*h^2)*p^2*q^3 - 6*(3*a*b^2*e*f^2*g^2 - 3*a*b^2*e^2
*f*g*h + a*b^2*e^3*h^2)*p*q^2 + 2*(b^3*f^3*h^2*p^2*q^3 - 3*a*b^2*f^3*h^2*p*
q^2)*x^3 - 3*(6*a*b^2*f^3*g*h*p*q^2 - (3*b^3*f^3*g*h - b^3*e*f^2*h^2)*p^2*q
^3)*x^2 - 6*(3*a*b^2*f^3*g^2*p*q^2 - (3*b^3*f^3*g^2 - 3*b^3*e*f^2*g*h + b^3
*e^2*f*h^2)*p^2*q^3)*x - 6*(b^3*f^3*h^2*p*q^2*x^3 + 3*b^3*f^3*g*h*p*q^2*x^2
 + 3*b^3*f^3*g^2*p*q^2*x + (3*b^3*e*f^2*g^2 - 3*b^3*e^2*f*g*h + b^3*e^3*h^2
)*p*q^2)*log(c))*log(d))*log(f*x + e) - 6*(2*(2*b^3*f^3*h^2*p^2*q^2 - 6*a*b
^2*f^3*h^2*p*q + 9*a^2*b*f^3*h^2)*x^3 + 3*(18*a^2*b*f^3*g*h + (9*b^3*f^3*g*
h - 5*b^3*e*f^2*h^2)*p^2*q^2 - 6*(3*a*b^2*f^3*g*h - a*b^2*e*f^2*h^2)*p*q)*x
^2 + 6*(9*a^2*b*f^3*g^2 + (18*b^3*f^3*g^2 - 27*b^3*e*f^2*g*h + 11*b^3*e^2*f
*h^2)*p^2*q^2 - 6*(3*a*b^2*f^3*g^2 - 3*a*b^2*e*f^2*g*h + a*b^2*e^2*f*h^2)*p
*q)*x)*log(c) - 6*(2*(2*b^3*f^3*h^2*p^2*q^3 - 6*a*b^2*f^3*h^2*p*q^2 + 9*a^2
*b*f^3*h^2*q)*x^3 + 3*(18*a^2*b*f^3*g*h*q + (9*b^3*f^3*g*h - 5*b^3*e*f^2*h^
2)*p^2*q^3 - 6*(3*a*b^2*f^3*g*h - a*b^2*e*f^2*h^2)*p*q^2)*x^2 + 18*(b^3*f^3
*h^2*q*x^3 + 3*b^3*f^3*g*h*q*x^2 + 3*b^3*f^3*g^2*q*x)*log(c)^2 + 6*(9*a^2*b
*f^3*g^2*q + (18*b^3*f^3*g^2 - 27*b^3*e*f^2*g*h + 11*b^3*e^2*f*h^2)*p^2*q^3
 - 6*(3*a*b^2*f^3*g^2 - 3*a*b^2*e*f^2*g*h + a*b^2*e^2*f*h^2)*p*q^2)*x - 6*(
2*(b^3*f^3*h^2*p*q^2 - 3*a*b^2*f^3*h^2*q)*x^3 - 3*(6*a*b^2*f^3*g*h*q - (3*b
^3*f^3*g*h - b^3*e*f^2*h^2)*p*q^2)*x^2 - 6*(3*a*b^2*f^3*g^2*q - (3*b^3*f^3*
g^2 - 3*b^3*e*f^2*g*h + b^3*e^2*f*h^2)*p*q^2)*x)*log(c))*log(d))/f^3
```

Sympy [A] time = 124.17, size = 5008, normalized size = 10.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*g**2*x + a**3*g*h*x**2 + a**3*h**2*x**3/3 + a**2*b*e**3*h**
2*p*q*log(e + f*x)/f**3 - 3*a**2*b*e**2*g*h*p*q*log(e + f*x)/f**2 - a**2*b*
e**2*h**2*p*q*x/f**2 + 3*a**2*b*e*g**2*p*q*log(e + f*x)/f + 3*a**2*b*e*g*h*
p*q*x/f + a**2*b*e*h**2*p*q*x**2/(2*f) + 3*a**2*b*g**2*p*q*x*log(e + f*x) -
 3*a**2*b*g**2*p*q*x + 3*a**2*b*g**2*q*x*log(d) + 3*a**2*b*g**2*x*log(c) +
3*a**2*b*g*h*p*q*x**2*log(e + f*x) - 3*a**2*b*g*h*p*q*x**2/2 + 3*a**2*b*g*h
*q*x**2*log(d) + 3*a**2*b*g*h*x**2*log(c) + a**2*b*h**2*p*q*x**3*log(e + f*
x) - a**2*b*h**2*p*q*x**3/3 + a**2*b*h**2*q*x**3*log(d) + a**2*b*h**2*x**3*
log(c) + a*b**2*e**3*h**2*p**2*q**2*log(e + f*x)**2/f**3 - 11*a*b**2*e**3*h
**2*p**2*q**2*log(e + f*x)/(3*f**3) + 2*a*b**2*e**3*h**2*p*q**2*log(d)*log(
e + f*x)/f**3 + 2*a*b**2*e**3*h**2*p*q*log(c)*log(e + f*x)/f**3 - 3*a*b**2*
e**2*g*h*p**2*q**2*log(e + f*x)**2/f**2 + 9*a*b**2*e**2*g*h*p**2*q**2*log(e
 + f*x)/f**2 - 6*a*b**2*e**2*g*h*p*q**2*log(d)*log(e + f*x)/f**2 - 6*a*b**2
*e**2*g*h*p*q*log(c)*log(e + f*x)/f**2 - 2*a*b**2*e**2*h**2*p**2*q**2*x*log
(e + f*x)/f**2 + 11*a*b**2*e**2*h**2*p**2*q**2*x/(3*f**2) - 2*a*b**2*e**2*h
**2*p*q**2*x*log(d)/f**2 - 2*a*b**2*e**2*h**2*p*q*x*log(c)/f**2 + 3*a*b**2*
e*g**2*p**2*q**2*log(e + f*x)**2/f - 6*a*b**2*e*g**2*p**2*q**2*log(e + f*x)
/f + 6*a*b**2*e*g**2*p*q**2*log(d)*log(e + f*x)/f + 6*a*b**2*e*g**2*p*q*log
(c)*log(e + f*x)/f + 6*a*b**2*e*g*h*p**2*q**2*x*log(e + f*x)/f - 9*a*b**2*e
*g*h*p**2*q**2*x/f + 6*a*b**2*e*g*h*p*q**2*x*log(d)/f + 6*a*b**2*e*g*h*p*q*
x*log(c)/f + a*b**2*e*h**2*p**2*q**2*x**2*log(e + f*x)/f - 5*a*b**2*e*h**2*
p**2*q**2*x**2/(6*f) + a*b**2*e*h**2*p*q**2*x**2*log(d)/f + a*b**2*e*h**2*p
*q*x**2*log(c)/f + 3*a*b**2*g**2*p**2*q**2*x*log(e + f*x)**2 - 6*a*b**2*g**
2*p**2*q**2*x*log(e + f*x) + 6*a*b**2*g**2*p**2*q**2*x + 6*a*b**2*g**2*p*q*
*2*x*log(d)*log(e + f*x) - 6*a*b**2*g**2*p*q**2*x*log(d) + 6*a*b**2*g**2*p*
q*x*log(c)*log(e + f*x) - 6*a*b**2*g**2*p*q*x*log(c) + 3*a*b**2*g**2*q**2*x
*log(d)**2 + 6*a*b**2*g**2*q*x*log(c)*log(d) + 3*a*b**2*g**2*x*log(c)**2 +
3*a*b**2*g*h*p**2*q**2*x**2*log(e + f*x)**2 - 3*a*b**2*g*h*p**2*q**2*x**2*l
og(e + f*x) + 3*a*b**2*g*h*p**2*q**2*x**2/2 + 6*a*b**2*g*h*p*q**2*x**2*log(
d)*log(e + f*x) - 3*a*b**2*g*h*p*q**2*x**2*log(d) + 6*a*b**2*g*h*p*q*x**2*l
og(c)*log(e + f*x) - 3*a*b**2*g*h*p*q*x**2*log(c) + 3*a*b**2*g*h*q**2*x**2*
log(d)**2 + 6*a*b**2*g*h*q*x**2*log(c)*log(d) + 3*a*b**2*g*h*x**2*log(c)**2
 + a*b**2*h**2*p**2*q**2*x**3*log(e + f*x)**2 - 2*a*b**2*h**2*p**2*q**2*x**
3*log(e + f*x)/3 + 2*a*b**2*h**2*p**2*q**2*x**3/9 + 2*a*b**2*h**2*p*q**2*x*
*3*log(d)*log(e + f*x) - 2*a*b**2*h**2*p*q**2*x**3*log(d)/3 + 2*a*b**2*h**2
*p*q*x**3*log(c)*log(e + f*x) - 2*a*b**2*h**2*p*q*x**3*log(c)/3 + a*b**2*h*
*2*q**2*x**3*log(d)**2 + 2*a*b**2*h**2*q*x**3*log(c)*log(d) + a*b**2*h**2*x
**3*log(c)**2 + b**3*e**3*h**2*p**3*q**3*log(e + f*x)**3/(3*f**3) - 11*b**3
*e**3*h**2*p**3*q**3*log(e + f*x)**2/(6*f**3) + 85*b**3*e**3*h**2*p**3*q**3
*log(e + f*x)/(18*f**3) + b**3*e**3*h**2*p**2*q**3*log(d)*log(e + f*x)**2/f
**3 - 11*b**3*e**3*h**2*p**2*q**3*log(d)*log(e + f*x)/(3*f**3) + b**3*e**3*
h**2*p**2*q**2*log(c)*log(e + f*x)**2/f**3 - 11*b**3*e**3*h**2*p**2*q**2*lo
g(c)*log(e + f*x)/(3*f**3) + b**3*e**3*h**2*p*q**3*log(d)**2*log(e + f*x)/f
**3 + 2*b**3*e**3*h**2*p*q**2*log(c)*log(d)*log(e + f*x)/f**3 + b**3*e**3*h
**2*p*q*log(c)**2*log(e + f*x)/f**3 - b**3*e**2*g*h*p**3*q**3*log(e + f*x)*
*3/f**2 + 9*b**3*e**2*g*h*p**3*q**3*log(e + f*x)**2/(2*f**2) - 21*b**3*e**2
*g*h*p**3*q**3*log(e + f*x)/(2*f**2) - 3*b**3*e**2*g*h*p**2*q**3*log(d)*log
(e + f*x)**2/f**2 + 9*b**3*e**2*g*h*p**2*q**3*log(d)*log(e + f*x)/f**2 - 3*
b**3*e**2*g*h*p**2*q**2*log(c)*log(e + f*x)**2/f**2 + 9*b**3*e**2*g*h*p**2*
q**2*log(c)*log(e + f*x)/f**2 - 3*b**3*e**2*g*h*p*q**3*log(d)**2*log(e + f*
x)/f**2 - 6*b**3*e**2*g*h*p*q**2*log(c)*log(d)*log(e + f*x)/f**2 - 3*b**3*e
```

```
**2*g*h*p*q*log(c)**2*log(e + f*x)/f**2 - b**3*e**2*h**2*p**3*q**3*x*log(e
+ f*x)**2/f**2 + 11*b**3*e**2*h**2*p**3*q**3*x*log(e + f*x)/(3*f**2) - 85*b
**3*e**2*h**2*p**3*q**3*x/(18*f**2) - 2*b**3*e**2*h**2*p**2*q**3*x*log(d)*l
og(e + f*x)/f**2 + 11*b**3*e**2*h**2*p**2*q**3*x*log(d)/(3*f**2) - 2*b**3*e
**2*h**2*p**2*q**2*x*log(c)*log(e + f*x)/f**2 + 11*b**3*e**2*h**2*p**2*q**2
*x*log(c)/(3*f**2) - b**3*e**2*h**2*p*q**3*x*log(d)**2/f**2 - 2*b**3*e**2*h
**2*p*q**2*x*log(c)*log(d)/f**2 - b**3*e**2*h**2*p*q*x*log(c)**2/f**2 + b**
3*e*g**2*p**3*q**3*log(e + f*x)**3/f - 3*b**3*e*g**2*p**3*q**3*log(e + f*x)
**2/f + 6*b**3*e*g**2*p**3*q**3*log(e + f*x)/f + 3*b**3*e*g**2*p**2*q**3*lo
g(d)*log(e + f*x)**2/f - 6*b**3*e*g**2*p**2*q**3*log(d)*log(e + f*x)/f + 3*
b**3*e*g**2*p**2*q**2*log(c)*log(e + f*x)**2/f - 6*b**3*e*g**2*p**2*q**2*lo
g(c)*log(e + f*x)/f + 3*b**3*e*g**2*p*q**3*log(d)**2*log(e + f*x)/f + 6*b**
3*e*g**2*p*q**2*log(c)*log(d)*log(e + f*x)/f + 3*b**3*e*g**2*p*q*log(c)**2*
log(e + f*x)/f + 3*b**3*e*g*h*p**3*q**3*x*log(e + f*x)**2/f - 9*b**3*e*g*h*
p**3*q**3*x*log(e + f*x)/f + 21*b**3*e*g*h*p**3*q**3*x/(2*f) + 6*b**3*e*g*h
*p**2*q**3*x*log(d)*log(e + f*x)/f - 9*b**3*e*g*h*p**2*q**3*x*log(d)/f + 6*
b**3*e*g*h*p**2*q**2*x*log(c)*log(e + f*x)/f - 9*b**3*e*g*h*p**2*q**2*x*log
(c)/f + 3*b**3*e*g*h*p*q**3*x*log(d)**2/f + 6*b**3*e*g*h*p*q**2*x*log(c)*lo
g(d)/f + 3*b**3*e*g*h*p*q*x*log(c)**2/f + b**3*e*h**2*p**3*q**3*x**2*log(e
+ f*x)**2/(2*f) - 5*b**3*e*h**2*p**3*q**3*x**2*log(e + f*x)/(6*f) + 19*b**3
*e*h**2*p**3*q**3*x**2/(36*f) + b**3*e*h**2*p**2*q**3*x**2*log(d)*log(e + f
*x)/f - 5*b**3*e*h**2*p**2*q**3*x**2*log(d)/(6*f) + b**3*e*h**2*p**2*q**2*x
**2*log(c)*log(e + f*x)/f - 5*b**3*e*h**2*p**2*q**2*x**2*log(c)/(6*f) + b**
3*e*h**2*p*q**3*x**2*log(d)**2/(2*f) + b**3*e*h**2*p*q**2*x**2*log(c)*log(d
)/f + b**3*e*h**2*p*q*x**2*log(c)**2/(2*f) + b**3*g**2*p**3*q**3*x*log(e +
f*x)**3 - 3*b**3*g**2*p**3*q**3*x*log(e + f*x)**2 + 6*b**3*g**2*p**3*q**3*x
*log(e + f*x) - 6*b**3*g**2*p**3*q**3*x + 3*b**3*g**2*p**2*q**3*x*log(d)*lo
g(e + f*x)**2 - 6*b**3*g**2*p**2*q**3*x*log(d)*log(e + f*x) + 6*b**3*g**2*p
**2*q**3*x*log(d) + 3*b**3*g**2*p**2*q**2*x*log(c)*log(e + f*x)**2 - 6*b**3
*g**2*p**2*q**2*x*log(c)*log(e + f*x) + 6*b**3*g**2*p**2*q**2*x*log(c) + 3*
b**3*g**2*p*q**3*x*log(d)**2*log(e + f*x) - 3*b**3*g**2*p*q**3*x*log(d)**2
+ 6*b**3*g**2*p*q**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3*g**2*p*q**2*x*lo
g(c)*log(d) + 3*b**3*g**2*p*q*x*log(c)**2*log(e + f*x) - 3*b**3*g**2*p*q*x*
log(c)**2 + b**3*g**2*q**3*x*log(d)**3 + 3*b**3*g**2*q**2*x*log(c)*log(d)**
2 + 3*b**3*g**2*q*x*log(c)**2*log(d) + b**3*g**2*x*log(c)**3 + b**3*g*h*p**
3*q**3*x**2*log(e + f*x)**3 - 3*b**3*g*h*p**3*q**3*x**2*log(e + f*x)**2/2 +
 3*b**3*g*h*p**3*q**3*x**2*log(e + f*x)/2 - 3*b**3*g*h*p**3*q**3*x**2/4 + 3
*b**3*g*h*p**2*q**3*x**2*log(d)*log(e + f*x)**2 - 3*b**3*g*h*p**2*q**3*x**2
*log(d)*log(e + f*x) + 3*b**3*g*h*p**2*q**3*x**2*log(d)/2 + 3*b**3*g*h*p**2
*q**2*x**2*log(c)*log(e + f*x)**2 - 3*b**3*g*h*p**2*q**2*x**2*log(c)*log(e
+ f*x) + 3*b**3*g*h*p**2*q**2*x**2*log(c)/2 + 3*b**3*g*h*p*q**3*x**2*log(d)
**2*log(e + f*x) - 3*b**3*g*h*p*q**3*x**2*log(d)**2/2 + 6*b**3*g*h*p*q**2*x
**2*log(c)*log(d)*log(e + f*x) - 3*b**3*g*h*p*q**2*x**2*log(c)*log(d) + 3*b
**3*g*h*p*q*x**2*log(c)**2*log(e + f*x) - 3*b**3*g*h*p*q*x**2*log(c)**2/2 +
 b**3*g*h*q**3*x**2*log(d)**3 + 3*b**3*g*h*q**2*x**2*log(c)*log(d)**2 + 3*b
**3*g*h*q*x**2*log(c)**2*log(d) + b**3*g*h*x**2*log(c)**3 + b**3*h**2*p**3*
q**3*x**3*log(e + f*x)**3/3 - b**3*h**2*p**3*q**3*x**3*log(e + f*x)**2/3 +
2*b**3*h**2*p**3*q**3*x**3*log(e + f*x)/9 - 2*b**3*h**2*p**3*q**3*x**3/27 +
 b**3*h**2*p**2*q**3*x**3*log(d)*log(e + f*x)**2 - 2*b**3*h**2*p**2*q**3*x*
*3*log(d)*log(e + f*x)/3 + 2*b**3*h**2*p**2*q**3*x**3*log(d)/9 + b**3*h**2*
p**2*q**2*x**3*log(c)*log(e + f*x)**2 - 2*b**3*h**2*p**2*q**2*x**3*log(c)*l
og(e + f*x)/3 + 2*b**3*h**2*p**2*q**2*x**3*log(c)/9 + b**3*h**2*p*q**3*x**3
*log(d)**2*log(e + f*x) - b**3*h**2*p*q**3*x**3*log(d)**2/3 + 2*b**3*h**2*p
*q**2*x**3*log(c)*log(d)*log(e + f*x) - 2*b**3*h**2*p*q**2*x**3*log(c)*log(
d)/3 + b**3*h**2*p*q*x**3*log(c)**2*log(e + f*x) - b**3*h**2*p*q*x**3*log(c
)**2/3 + b**3*h**2*q**3*x**3*log(d)**3/3 + b**3*h**2*q**2*x**3*log(c)*log(d
)**2 + b**3*h**2*q*x**3*log(c)**2*log(d) + b**3*h**2*x**3*log(c)**3/3, Ne(f
, 0)), ((a + b*log(c*(d*e**p)**q))**3*(g**2*x + g*h*x**2 + h**2*x**3/3), Tr
ue))
```

Giac [B] time = 1.67604, size = 7974, normalized size = 16.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*g^2*p^3*q^3*log(f*x + e)^3/f + (f*x + e)^2*b^3*g*h*p^3*q^3*lo
g(f*x + e)^3/f^2 + 1/3*(f*x + e)^3*b^3*h^2*p^3*q^3*log(f*x + e)^3/f^3 - 2*(
f*x + e)*b^3*g*h*p^3*q^3*e*log(f*x + e)^3/f^2 - (f*x + e)^2*b^3*h^2*p^3*q^3
*e*log(f*x + e)^3/f^3 - 3*(f*x + e)*b^3*g^2*p^3*q^3*log(f*x + e)^2/f - 3/2*
(f*x + e)^2*b^3*g*h*p^3*q^3*log(f*x + e)^2/f^2 - 1/3*(f*x + e)^3*b^3*h^2*p^
3*q^3*log(f*x + e)^2/f^3 + 6*(f*x + e)*b^3*g*h*p^3*q^3*e*log(f*x + e)^2/f^2
 + 3/2*(f*x + e)^2*b^3*h^2*p^3*q^3*e*log(f*x + e)^2/f^3 + (f*x + e)*b^3*h^2
*p^3*q^3*e^2*log(f*x + e)^3/f^3 + 3*(f*x + e)*b^3*g^2*p^2*q^3*log(f*x + e)^
2*log(d)/f + 3*(f*x + e)^2*b^3*g*h*p^2*q^3*log(f*x + e)^2*log(d)/f^2 + (f*x
 + e)^3*b^3*h^2*p^2*q^3*log(f*x + e)^2*log(d)/f^3 - 6*(f*x + e)*b^3*g*h*p^2
*q^3*e*log(f*x + e)^2*log(d)/f^2 - 3*(f*x + e)^2*b^3*h^2*p^2*q^3*e*log(f*x
+ e)^2*log(d)/f^3 + 6*(f*x + e)*b^3*g^2*p^3*q^3*log(f*x + e)/f + 3/2*(f*x +
 e)^2*b^3*g*h*p^3*q^3*log(f*x + e)/f^2 + 2/9*(f*x + e)^3*b^3*h^2*p^3*q^3*lo
g(f*x + e)/f^3 - 12*(f*x + e)*b^3*g*h*p^3*q^3*e*log(f*x + e)/f^2 - 3/2*(f*x
 + e)^2*b^3*h^2*p^3*q^3*e*log(f*x + e)/f^3 - 3*(f*x + e)*b^3*h^2*p^3*q^3*e^
2*log(f*x + e)^2/f^3 + 3*(f*x + e)*b^3*g^2*p^2*q^2*log(f*x + e)^2*log(c)/f
+ 3*(f*x + e)^2*b^3*g*h*p^2*q^2*log(f*x + e)^2*log(c)/f^2 + (f*x + e)^3*b^3
*h^2*p^2*q^2*log(f*x + e)^2*log(c)/f^3 - 6*(f*x + e)*b^3*g*h*p^2*q^2*e*log(
f*x + e)^2*log(c)/f^2 - 3*(f*x + e)^2*b^3*h^2*p^2*q^2*e*log(f*x + e)^2*log(
c)/f^3 - 6*(f*x + e)*b^3*g^2*p^2*q^3*log(f*x + e)*log(d)/f - 3*(f*x + e)^2*
b^3*g*h*p^2*q^3*log(f*x + e)*log(d)/f^2 - 2/3*(f*x + e)^3*b^3*h^2*p^2*q^3*l
og(f*x + e)*log(d)/f^3 + 12*(f*x + e)*b^3*g*h*p^2*q^3*e*log(f*x + e)*log(d)
/f^2 + 3*(f*x + e)^2*b^3*h^2*p^2*q^3*e*log(f*x + e)*log(d)/f^3 + 3*(f*x + e
)*b^3*h^2*p^2*q^3*e^2*log(f*x + e)^2*log(d)/f^3 + 3*(f*x + e)*b^3*g^2*p*q^3
*log(f*x + e)*log(d)^2/f + 3*(f*x + e)^2*b^3*g*h*p*q^3*log(f*x + e)*log(d)^
2/f^2 + (f*x + e)^3*b^3*h^2*p*q^3*log(f*x + e)*log(d)^2/f^3 - 6*(f*x + e)*b
^3*g*h*p*q^3*e*log(f*x + e)*log(d)^2/f^2 - 3*(f*x + e)^2*b^3*h^2*p*q^3*e*lo
g(f*x + e)*log(d)^2/f^3 - 6*(f*x + e)*b^3*g^2*p^3*q^3/f - 3/4*(f*x + e)^2*b
^3*g*h*p^3*q^3/f^2 - 2/27*(f*x + e)^3*b^3*h^2*p^3*q^3/f^3 + 12*(f*x + e)*b^
3*g*h*p^3*q^3*e/f^2 + 3/4*(f*x + e)^2*b^3*h^2*p^3*q^3*e/f^3 + 6*(f*x + e)*b
^3*h^2*p^3*q^3*e^2*log(f*x + e)/f^3 + 3*(f*x + e)*a*b^2*g^2*p^2*q^2*log(f*x
 + e)^2/f + 3*(f*x + e)^2*a*b^2*g*h*p^2*q^2*log(f*x + e)^2/f^2 + (f*x + e)^
3*a*b^2*h^2*p^2*q^2*log(f*x + e)^2/f^3 - 6*(f*x + e)*a*b^2*g*h*p^2*q^2*e*lo
g(f*x + e)^2/f^2 - 3*(f*x + e)^2*a*b^2*h^2*p^2*q^2*e*log(f*x + e)^2/f^3 - 6
*(f*x + e)*b^3*g^2*p^2*q^2*log(f*x + e)*log(c)/f - 3*(f*x + e)^2*b^3*g*h*p^
2*q^2*log(f*x + e)*log(c)/f^2 - 2/3*(f*x + e)^3*b^3*h^2*p^2*q^2*log(f*x + e
)*log(c)/f^3 + 12*(f*x + e)*b^3*g*h*p^2*q^2*e*log(f*x + e)*log(c)/f^2 + 3*(
f*x + e)^2*b^3*h^2*p^2*q^2*e*log(f*x + e)*log(c)/f^3 + 3*(f*x + e)*b^3*h^2*
p^2*q^2*e^2*log(f*x + e)^2*log(c)/f^3 + 6*(f*x + e)*b^3*g^2*p^2*q^3*log(d)/
f + 3/2*(f*x + e)^2*b^3*g*h*p^2*q^3*log(d)/f^2 + 2/9*(f*x + e)^3*b^3*h^2*p^
2*q^3*log(d)/f^3 - 12*(f*x + e)*b^3*g*h*p^2*q^3*e*log(d)/f^2 - 3/2*(f*x + e
)^2*b^3*h^2*p^2*q^3*e*log(d)/f^3 - 6*(f*x + e)*b^3*h^2*p^2*q^3*e^2*log(f*x
+ e)*log(d)/f^3 + 6*(f*x + e)*b^3*g^2*p*q^2*log(f*x + e)*log(c)*log(d)/f +
6*(f*x + e)^2*b^3*g*h*p*q^2*log(f*x + e)*log(c)*log(d)/f^2 + 2*(f*x + e)^3*
b^3*h^2*p*q^2*log(f*x + e)*log(c)*log(d)/f^3 - 12*(f*x + e)*b^3*g*h*p*q^2*e
*log(f*x + e)*log(c)*log(d)/f^2 - 6*(f*x + e)^2*b^3*h^2*p*q^2*e*log(f*x + e
)*log(c)*log(d)/f^3 - 3*(f*x + e)*b^3*g^2*p*q^3*log(d)^2/f - 3/2*(f*x + e)^
2*b^3*g*h*p*q^3*log(d)^2/f^2 - 1/3*(f*x + e)^3*b^3*h^2*p*q^3*log(d)^2/f^3 +
```

6*(f*x + e)*b^3*g*h*p*q^3*e*log(d)^2/f^2 + 3/2*(f*x + e)^2*b^3*h^2*p*q^3*e
log(d)^2/f^3 + 3(f*x + e)*b^3*h^2*p*q^3*e^2*log(f*x + e)*log(d)^2/f^3 + (
f*x + e)*b^3*g^2*q^3*log(d)^3/f + (f*x + e)^2*b^3*g*h*q^3*log(d)^3/f^2 + 1/
3*(f*x + e)^3*b^3*h^2*q^3*log(d)^3/f^3 - 2*(f*x + e)*b^3*g*h*q^3*e*log(d)^3
/f^2 - (f*x + e)^2*b^3*h^2*q^3*e*log(d)^3/f^3 - 6*(f*x + e)*b^3*h^2*p^3*q^3
e^2/f^3 - 6(f*x + e)*a*b^2*g^2*p^2*q^2*log(f*x + e)/f - 3*(f*x + e)^2*a*b
^2*g*h*p^2*q^2*log(f*x + e)/f^2 - 2/3*(f*x + e)^3*a*b^2*h^2*p^2*q^2*log(f*x
 + e)/f^3 + 12*(f*x + e)*a*b^2*g*h*p^2*q^2*e*log(f*x + e)/f^2 + 3*(f*x + e)
^2*a*b^2*h^2*p^2*q^2*e*log(f*x + e)/f^3 + 3*(f*x + e)*a*b^2*h^2*p^2*q^2*e^2
*log(f*x + e)^2/f^3 + 6*(f*x + e)*b^3*g^2*p^2*q^2*log(c)/f + 3/2*(f*x + e)^
2*b^3*g*h*p^2*q^2*log(c)/f^2 + 2/9*(f*x + e)^3*b^3*h^2*p^2*q^2*log(c)/f^3 -
 12*(f*x + e)*b^3*g*h*p^2*q^2*e*log(c)/f^2 - 3/2*(f*x + e)^2*b^3*h^2*p^2*q^
2*e*log(c)/f^3 - 6*(f*x + e)*b^3*h^2*p^2*q^2*e^2*log(f*x + e)*log(c)/f^3 +
3*(f*x + e)*b^3*g^2*p*q*log(f*x + e)*log(c)^2/f + 3*(f*x + e)^2*b^3*g*h*p*q
*log(f*x + e)*log(c)^2/f^2 + (f*x + e)^3*b^3*h^2*p*q*log(f*x + e)*log(c)^2/
f^3 - 6*(f*x + e)*b^3*g*h*p*q*e*log(f*x + e)*log(c)^2/f^2 - 3*(f*x + e)^2*b
^3*h^2*p*q*e*log(f*x + e)*log(c)^2/f^3 + 6*(f*x + e)*b^3*h^2*p^2*q^3*e^2*lo
g(d)/f^3 + 6*(f*x + e)*a*b^2*g^2*p*q^2*log(f*x + e)*log(d)/f + 6*(f*x + e)^
2*a*b^2*g*h*p*q^2*log(f*x + e)*log(d)/f^2 + 2*(f*x + e)^3*a*b^2*h^2*p*q^2*l
og(f*x + e)*log(d)/f^3 - 12*(f*x + e)*a*b^2*g*h*p*q^2*e*log(f*x + e)*log(d)
/f^2 - 6*(f*x + e)^2*a*b^2*h^2*p*q^2*e*log(f*x + e)*log(d)/f^3 - 6*(f*x + e
)*b^3*g^2*p*q^2*log(c)*log(d)/f - 3*(f*x + e)^2*b^3*g*h*p*q^2*log(c)*log(d)
/f^2 - 2/3*(f*x + e)^3*b^3*h^2*p*q^2*log(c)*log(d)/f^3 + 12*(f*x + e)*b^3*g
*h*p*q^2*e*log(c)*log(d)/f^2 + 3*(f*x + e)^2*b^3*h^2*p*q^2*e*log(c)*log(d)/
f^3 + 6*(f*x + e)*b^3*h^2*p*q^2*e^2*log(f*x + e)*log(c)*log(d)/f^3 - 3*(f*x
 + e)*b^3*h^2*p*q^3*e^2*log(d)^2/f^3 + 3*(f*x + e)*b^3*g^2*q^2*log(c)*log(d
)^2/f + 3*(f*x + e)^2*b^3*g*h*q^2*log(c)*log(d)^2/f^2 + (f*x + e)^3*b^3*h^2
*q^2*log(c)*log(d)^2/f^3 - 6*(f*x + e)*b^3*g*h*q^2*e*log(c)*log(d)^2/f^2 -
3*(f*x + e)^2*b^3*h^2*q^2*e*log(c)*log(d)^2/f^3 + (f*x + e)*b^3*h^2*q^3*e^2
log(d)^3/f^3 + 6(f*x + e)*a*b^2*g^2*p^2*q^2/f + 3/2*(f*x + e)^2*a*b^2*g*h
*p^2*q^2/f^2 + 2/9*(f*x + e)^3*a*b^2*h^2*p^2*q^2/f^3 - 12*(f*x + e)*a*b^2*g
*h*p^2*q^2*e/f^2 - 3/2*(f*x + e)^2*a*b^2*h^2*p^2*q^2*e/f^3 - 6*(f*x + e)*a*
b^2*h^2*p^2*q^2*e^2*log(f*x + e)/f^3 + 6*(f*x + e)*b^3*h^2*p^2*q^2*e^2*log(
c)/f^3 + 6*(f*x + e)*a*b^2*g^2*p*q*log(f*x + e)*log(c)/f + 6*(f*x + e)^2*a*
b^2*g*h*p*q*log(f*x + e)*log(c)/f^2 + 2*(f*x + e)^3*a*b^2*h^2*p*q*log(f*x +
 e)*log(c)/f^3 - 12*(f*x + e)*a*b^2*g*h*p*q*e*log(f*x + e)*log(c)/f^2 - 6*(
f*x + e)^2*a*b^2*h^2*p*q*e*log(f*x + e)*log(c)/f^3 - 3*(f*x + e)*b^3*g^2*p*
q*log(c)^2/f - 3/2*(f*x + e)^2*b^3*g*h*p*q*log(c)^2/f^2 - 1/3*(f*x + e)^3*b
^3*h^2*p*q*log(c)^2/f^3 + 6*(f*x + e)*b^3*g*h*p*q*e*log(c)^2/f^2 + 3/2*(f*x
 + e)^2*b^3*h^2*p*q*e*log(c)^2/f^3 + 3*(f*x + e)*b^3*h^2*p*q*e^2*log(f*x +
e)*log(c)^2/f^3 - 6*(f*x + e)*a*b^2*g^2*p*q^2*log(d)/f - 3*(f*x + e)^2*a*b^
2*g*h*p*q^2*log(d)/f^2 - 2/3*(f*x + e)^3*a*b^2*h^2*p*q^2*log(d)/f^3 + 12*(f
*x + e)*a*b^2*g*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)^2*a*b^2*h^2*p*q^2*e*log(
d)/f^3 + 6*(f*x + e)*a*b^2*h^2*p*q^2*e^2*log(f*x + e)*log(d)/f^3 - 6*(f*x +
 e)*b^3*h^2*p*q^2*e^2*log(c)*log(d)/f^3 + 3*(f*x + e)*b^3*g^2*q*log(c)^2*lo
g(d)/f + 3*(f*x + e)^2*b^3*g*h*q*log(c)^2*log(d)/f^2 + (f*x + e)^3*b^3*h^2*
q*log(c)^2*log(d)/f^3 - 6*(f*x + e)*b^3*g*h*q*e*log(c)^2*log(d)/f^2 - 3*(f*
x + e)^2*b^3*h^2*q*e*log(c)^2*log(d)/f^3 + 3*(f*x + e)*a*b^2*g^2*q^2*log(d)
^2/f + 3*(f*x + e)^2*a*b^2*g*h*q^2*log(d)^2/f^2 + (f*x + e)^3*a*b^2*h^2*q^2
log(d)^2/f^3 - 6(f*x + e)*a*b^2*g*h*q^2*e*log(d)^2/f^2 - 3*(f*x + e)^2*a*
b^2*h^2*q^2*e*log(d)^2/f^3 + 3*(f*x + e)*b^3*h^2*q^2*e^2*log(c)*log(d)^2/f^
3 + 6*(f*x + e)*a*b^2*h^2*p^2*q^2*e^2/f^3 + 3*(f*x + e)*a^2*b*g^2*p*q*log(f
x + e)/f + 3(f*x + e)^2*a^2*b*g*h*p*q*log(f*x + e)/f^2 + (f*x + e)^3*a^2*
b*h^2*p*q*log(f*x + e)/f^3 - 6*(f*x + e)*a^2*b*g*h*p*q*e*log(f*x + e)/f^2 -
 3*(f*x + e)^2*a^2*b*h^2*p*q*e*log(f*x + e)/f^3 - 6*(f*x + e)*a*b^2*g^2*p*q
log(c)/f - 3(f*x + e)^2*a*b^2*g*h*p*q*log(c)/f^2 - 2/3*(f*x + e)^3*a*b^2*
h^2*p*q*log(c)/f^3 + 12*(f*x + e)*a*b^2*g*h*p*q*e*log(c)/f^2 + 3*(f*x + e)^
2*a*b^2*h^2*p*q*e*log(c)/f^3 + 6*(f*x + e)*a*b^2*h^2*p*q*e^2*log(f*x + e)*l
og(c)/f^3 - 3*(f*x + e)*b^3*h^2*p*q*e^2*log(c)^2/f^3 + (f*x + e)*b^3*g^2*lo

```
g(c)^3/f + (f*x + e)^2*b^3*g*h*log(c)^3/f^2 + 1/3*(f*x + e)^3*b^3*h^2*log(c
)^3/f^3 - 2*(f*x + e)*b^3*g*h*e*log(c)^3/f^2 - (f*x + e)^2*b^3*h^2*e*log(c)
^3/f^3 - 6*(f*x + e)*a*b^2*h^2*p*q^2*e^2*log(d)/f^3 + 6*(f*x + e)*a*b^2*g^2
*q*log(c)*log(d)/f + 6*(f*x + e)^2*a*b^2*g*h*q*log(c)*log(d)/f^2 + 2*(f*x +
 e)^3*a*b^2*h^2*q*log(c)*log(d)/f^3 - 12*(f*x + e)*a*b^2*g*h*q*e*log(c)*log
(d)/f^2 - 6*(f*x + e)^2*a*b^2*h^2*q*e*log(c)*log(d)/f^3 + 3*(f*x + e)*b^3*h
^2*q*e^2*log(c)^2*log(d)/f^3 + 3*(f*x + e)*a*b^2*h^2*q^2*e^2*log(d)^2/f^3 -
 3*(f*x + e)*a^2*b*g^2*p*q/f - 3/2*(f*x + e)^2*a^2*b*g*h*p*q/f^2 - 1/3*(f*x
 + e)^3*a^2*b*h^2*p*q/f^3 + 6*(f*x + e)*a^2*b*g*h*p*q*e/f^2 + 3/2*(f*x + e)
^2*a^2*b*h^2*p*q*e/f^3 + 3*(f*x + e)*a^2*b*h^2*p*q*e^2*log(f*x + e)/f^3 - 6
*(f*x + e)*a*b^2*h^2*p*q*e^2*log(c)/f^3 + 3*(f*x + e)*a*b^2*g^2*log(c)^2/f
+ 3*(f*x + e)^2*a*b^2*g*h*log(c)^2/f^2 + (f*x + e)^3*a*b^2*h^2*log(c)^2/f^3
 - 6*(f*x + e)*a*b^2*g*h*e*log(c)^2/f^2 - 3*(f*x + e)^2*a*b^2*h^2*e*log(c)^
2/f^3 + (f*x + e)*b^3*h^2*e^2*log(c)^3/f^3 + 3*(f*x + e)*a^2*b*g^2*q*log(d)
/f + 3*(f*x + e)^2*a^2*b*g*h*q*log(d)/f^2 + (f*x + e)^3*a^2*b*h^2*q*log(d)/
f^3 - 6*(f*x + e)*a^2*b*g*h*q*e*log(d)/f^2 - 3*(f*x + e)^2*a^2*b*h^2*q*e*lo
g(d)/f^3 + 6*(f*x + e)*a*b^2*h^2*q*e^2*log(c)*log(d)/f^3 - 3*(f*x + e)*a^2*
b*h^2*p*q*e^2/f^3 + 3*(f*x + e)*a^2*b*g^2*log(c)/f + 3*(f*x + e)^2*a^2*b*g*
h*log(c)/f^2 + (f*x + e)^3*a^2*b*h^2*log(c)/f^3 - 6*(f*x + e)*a^2*b*g*h*e*l
og(c)/f^2 - 3*(f*x + e)^2*a^2*b*h^2*e*log(c)/f^3 + 3*(f*x + e)*a*b^2*h^2*e^
2*log(c)^2/f^3 + 3*(f*x + e)*a^2*b*h^2*q*e^2*log(d)/f^3 + (f*x + e)*a^3*g^2
/f + (f*x + e)^2*a^3*g*h/f^2 + 1/3*(f*x + e)^3*a^3*h^2/f^3 - 2*(f*x + e)*a^
3*g*h*e/f^2 - (f*x + e)^2*a^3*h^2*e/f^3 + 3*(f*x + e)*a^2*b*h^2*e^2*log(c)/
f^3 + (f*x + e)*a^3*h^2*e^2/f^3
```

3.436 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx$

Optimal. Leaf size=306

$$\frac{3b^2hp^2q^2(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4f^2}+\frac{6ab^2p^2q^2x(fg-eh)}{f}-\frac{3bpq(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{f^2}$$

```
[Out] (6*a*b^2*(f*g - e*h)*p^2*q^2*x)/f - (6*b^3*(f*g - e*h)*p^3*q^3*x)/f - (3*b^
3*h*p^3*q^3*(e + f*x)^2)/(8*f^2) + (6*b^3*(f*g - e*h)*p^2*q^2*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/f^2 + (3*b^2*h*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d*(
e + f*x)^p)^q]))/(4*f^2) - (3*b*(f*g - e*h)*p*q*(e + f*x)*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/f^2 - (3*b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(4*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^
3)/f^2 + (h*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2)
```

Rubi [A] time = 0.534299, antiderivative size = 306, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2401, 2389, 2296, 2295, 2390, 2305, 2304, 2445}

$$\frac{3b^2hp^2q^2(e+fx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{4f^2}+\frac{6ab^2p^2q^2x(fg-eh)}{f}-\frac{3bpq(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```


```
[Out] (6*a*b^2*(f*g - e*h)*p^2*q^2*x)/f - (6*b^3*(f*g - e*h)*p^3*q^3*x)/f - (3*b^
3*h*p^3*q^3*(e + f*x)^2)/(8*f^2) + (6*b^3*(f*g - e*h)*p^2*q^2*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/f^2 + (3*b^2*h*p^2*q^2*(e + f*x)^2*(a + b*Log[c*(d*(
e + f*x)^p)^q]))/(4*f^2) - (3*b*(f*g - e*h)*p*q*(e + f*x)*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2)/f^2 - (3*b*h*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(4*f^2) + ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^
3)/f^2 + (h*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{f}+\frac{h(e+fx)\left(a+b\log\right.}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(\right.\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^3\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq},\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f^2}+\frac{h(e+fx)^2\left(a+b\log\right.}{2f}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f^2}-\frac{3bhpq(e+fx)}{}$$

$$= \frac{6ab^2(fg-eh)p^2q^2x}{f}-\frac{3b^3hp^3q^3(e+fx)^2}{8f^2}+\frac{3b^2hp^2q^2(e+fx)^2\left(a+b\log\right.}{4f^2}$$

$$= \frac{6ab^2(fg-eh)p^2q^2x}{f}-\frac{6b^3(fg-eh)p^3q^3x}{f}-\frac{3b^3hp^3q^3(e+fx)^2}{8f^2}+\frac{6b^3(f}{}$$

Mathematica [A] time = 0.123059, size = 231, normalized size = 0.75

$$\frac{8(e+fx)(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3-24bpq(fg-eh)\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2-2bpq\left(fx\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] (8*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 + 4*h*(e + f*x)
^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 24*b*(f*g - e*h)*p*q*((e + f*x)*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Lo
g[c*(d*(e + f*x)^p)^q])) - 3*b*h*p*q*(2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2 + b*p*q*(b*f*p*q*x*(2*e + f*x) - 2*(e + f*x)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q]))))/(8*f^2)
```

Maple [F] time = 0.279, size = 0, normalized size = 0.

$$\int \left(hx+g\right)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [B] time = 1.20498, size = 988, normalized size = 3.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/2*b^3*h*x^2*log(((f*x + e)^p*d)^q*c)^3 - 3*a^2*b*f*g*p*q*(x/f - e*log(f*x
 + e)/f^2) - 3/4*a^2*b*f*h*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^
2) + 3/2*a*b^2*h*x^2*log(((f*x + e)^p*d)^q*c)^2 + b^3*g*x*log(((f*x + e)^p*
d)^q*c)^3 + 3/2*a^2*b*h*x^2*log(((f*x + e)^p*d)^q*c) + 3*a*b^2*g*x*log(((f*
x + e)^p*d)^q*c)^2 + 1/2*a^3*h*x^2 + 3*a^2*b*g*x*log(((f*x + e)^p*d)^q*c) -
 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*
x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2*g - (3*f*p*q*(x/f - e
*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*lo
g(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^2
- 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*b^3*g
- 3/4*(2*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2*e*x)/f^2)*log(((f*x + e
)^p*d)^q*c) - (f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e
))*p^2*q^2/f^2)*a*b^2*h - 1/8*(6*f*p*q*(2*e^2*log(f*x + e)/f^3 + (f*x^2 - 2
*e*x)/f^2)*log(((f*x + e)^p*d)^q*c)^2 + ((4*e^2*log(f*x + e)^3 + 3*f^2*x^2
+ 18*e^2*log(f*x + e)^2 - 42*e*f*x + 42*e^2*log(f*x + e))*p^2*q^2/f^3 - 6*(
f^2*x^2 + 2*e^2*log(f*x + e)^2 - 6*e*f*x + 6*e^2*log(f*x + e))*p*q*log(((f*
x + e)^p*d)^q*c)/f^3)*f*p*q)*b^3*h + a^3*g*x
```

Fricas [B] time = 2.36837, size = 3510, normalized size = 11.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(4*(b^3*f^2*h*p^3*q^3*x^2 + 2*b^3*f^2*g*p^3*q^3*x + (2*b^3*e*f*g - b^3*
e^2*h)*p^3*q^3)*log(f*x + e)^3 + 4*(b^3*f^2*h*x^2 + 2*b^3*f^2*g*x)*log(c)^3
 + 4*(b^3*f^2*h*q^3*x^2 + 2*b^3*f^2*g*q^3*x)*log(d)^3 - (3*b^3*f^2*h*p^3*q^
3 - 6*a*b^2*f^2*h*p^2*q^2 + 6*a^2*b*f^2*h*p*q - 4*a^3*f^2*h)*x^2 - 6*((4*b^
3*e*f*g - 3*b^3*e^2*h)*p^3*q^3 - 2*(2*a*b^2*e*f*g - a*b^2*e^2*h)*p^2*q^2 +
(b^3*f^2*h*p^3*q^3 - 2*a*b^2*f^2*h*p^2*q^2)*x^2 - 2*(2*a*b^2*f^2*g*p^2*q^2
- (2*b^3*f^2*g - b^3*e*f*h)*p^3*q^3)*x - 2*(b^3*f^2*h*p^2*q^2*x^2 + 2*b^3*f
^2*g*p^2*q^2*x + (2*b^3*e*f*g - b^3*e^2*h)*p^2*q^2)*log(c) - 2*(b^3*f^2*h*p
^2*q^3*x^2 + 2*b^3*f^2*g*p^2*q^3*x + (2*b^3*e*f*g - b^3*e^2*h)*p^2*q^3)*log
(d))*log(f*x + e)^2 - 6*((b^3*f^2*h*p*q - 2*a*b^2*f^2*h)*x^2 - 2*(2*a*b^2*f
^2*g - (2*b^3*f^2*g - b^3*e*f*h)*p*q)*x)*log(c)^2 - 6*((b^3*f^2*h*p*q^3 - 2
*a*b^2*f^2*h*q^2)*x^2 - 2*(2*a*b^2*f^2*g*q^2 - (2*b^3*f^2*g - b^3*e*f*h)*p*
q^3)*x - 2*(b^3*f^2*h*q^2*x^2 + 2*b^3*f^2*g*q^2*x)*log(c))*log(d)^2 - 2*(3*
(8*b^3*f^2*g - 7*b^3*e*f*h)*p^3*q^3 - 4*a^3*f^2*g - 6*(4*a*b^2*f^2*g - 3*a*
b^2*e*f*h)*p^2*q^2 + 6*(2*a^2*b*f^2*g - a^2*b*e*f*h)*p*q)*x + 6*((8*b^3*e*f
*g - 7*b^3*e^2*h)*p^3*q^3 - 2*(4*a*b^2*e*f*g - 3*a*b^2*e^2*h)*p^2*q^2 + 2*(
2*a^2*b*e*f*g - a^2*b*e^2*h)*p*q + (b^3*f^2*h*p^3*q^3 - 2*a*b^2*f^2*h*p^2*q
^2 + 2*a^2*b*f^2*h*p*q)*x^2 + 2*(b^3*f^2*h*p*q*x^2 + 2*b^3*f^2*g*p*q*x + (2
*b^3*e*f*g - b^3*e^2*h)*p*q)*log(c)^2 + 2*(b^3*f^2*h*p*q^3*x^2 + 2*b^3*f^2*
g*p*q^3*x + (2*b^3*e*f*g - b^3*e^2*h)*p*q^3)*log(d)^2 + 2*(2*a^2*b*f^2*g*p*
q + (4*b^3*f^2*g - 3*b^3*e*f*h)*p^3*q^3 - 2*(2*a*b^2*f^2*g - a*b^2*e*f*h)*p
```

```
^2*q^2)*x - 2*((4*b^3*e*f*g - 3*b^3*e^2*h)*p^2*q^2 - 2*(2*a*b^2*e*f*g - a*b
^2*e^2*h)*p*q + (b^3*f^2*h*p^2*q^2 - 2*a*b^2*f^2*h*p*q)*x^2 - 2*(2*a*b^2*f^
2*g*p*q - (2*b^3*f^2*g - b^3*e*f*h)*p^2*q^2)*x)*log(c) - 2*((4*b^3*e*f*g -
3*b^3*e^2*h)*p^2*q^3 - 2*(2*a*b^2*e*f*g - a*b^2*e^2*h)*p*q^2 + (b^3*f^2*h*p
^2*q^3 - 2*a*b^2*f^2*h*p*q^2)*x^2 - 2*(2*a*b^2*f^2*g*p*q^2 - (2*b^3*f^2*g -
 b^3*e*f*h)*p^2*q^3)*x - 2*(b^3*f^2*h*p*q^2*x^2 + 2*b^3*f^2*g*p*q^2*x + (2*
b^3*e*f*g - b^3*e^2*h)*p*q^2)*log(c))*log(d))*log(f*x + e) + 6*((b^3*f^2*h*
p^2*q^2 - 2*a*b^2*f^2*h*p*q + 2*a^2*b*f^2*h)*x^2 + 2*(2*a^2*b*f^2*g + (4*b^
3*f^2*g - 3*b^3*e*f*h)*p^2*q^2 - 2*(2*a*b^2*f^2*g - a*b^2*e*f*h)*p*q)*x)*lo
g(c) + 6*((b^3*f^2*h*p^2*q^3 - 2*a*b^2*f^2*h*p*q^2 + 2*a^2*b*f^2*h*q)*x^2 +
 2*(b^3*f^2*h*q*x^2 + 2*b^3*f^2*g*q*x)*log(c)^2 + 2*(2*a^2*b*f^2*g*q + (4*b
^3*f^2*g - 3*b^3*e*f*h)*p^2*q^3 - 2*(2*a*b^2*f^2*g - a*b^2*e*f*h)*p*q^2)*x
- 2*((b^3*f^2*h*p*q^2 - 2*a*b^2*f^2*h*q)*x^2 - 2*(2*a*b^2*f^2*g*q - (2*b^3*
f^2*g - b^3*e*f*h)*p*q^2)*x)*log(c))*log(d))/f^2
```

Sympy [A] time = 31.6548, size = 2756, normalized size = 9.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*g*x + a**3*h*x**2/2 - 3*a**2*b*e**2*h*p*q*log(e + f*x)/(2*f
**2) + 3*a**2*b*e*g*p*q*log(e + f*x)/f + 3*a**2*b*e*h*p*q*x/(2*f) + 3*a**2*
b*g*p*q*x*log(e + f*x) - 3*a**2*b*g*p*q*x + 3*a**2*b*g*q*x*log(d) + 3*a**2*
b*g*x*log(c) + 3*a**2*b*h*p*q*x**2*log(e + f*x)/2 - 3*a**2*b*h*p*q*x**2/4 +
 3*a**2*b*h*q*x**2*log(d)/2 + 3*a**2*b*h*x**2*log(c)/2 - 3*a*b**2*e**2*h*p*
*2*q**2*log(e + f*x)**2/(2*f**2) + 9*a*b**2*e**2*h*p**2*q**2*log(e + f*x)/(
2*f**2) - 3*a*b**2*e**2*h*p*q**2*log(d)*log(e + f*x)/f**2 - 3*a*b**2*e**2*h
*p*q*log(c)*log(e + f*x)/f**2 + 3*a*b**2*e*g*p**2*q**2*log(e + f*x)**2/f -
6*a*b**2*e*g*p**2*q**2*log(e + f*x)/f + 6*a*b**2*e*g*p*q**2*log(d)*log(e +
f*x)/f + 6*a*b**2*e*g*p*q*log(c)*log(e + f*x)/f + 3*a*b**2*e*h*p**2*q**2*x*
log(e + f*x)/f - 9*a*b**2*e*h*p**2*q**2*x/(2*f) + 3*a*b**2*e*h*p*q**2*x*log
(d)/f + 3*a*b**2*e*h*p*q*x*log(c)/f + 3*a*b**2*g*p**2*q**2*x*log(e + f*x)**
2 - 6*a*b**2*g*p**2*q**2*x*log(e + f*x) + 6*a*b**2*g*p**2*q**2*x + 6*a*b**2
*g*p*q**2*x*log(d)*log(e + f*x) - 6*a*b**2*g*p*q**2*x*log(d) + 6*a*b**2*g*p
*q*x*log(c)*log(e + f*x) - 6*a*b**2*g*p*q*x*log(c) + 3*a*b**2*g*q**2*x*log(
d)**2 + 6*a*b**2*g*q*x*log(c)*log(d) + 3*a*b**2*g*x*log(c)**2 + 3*a*b**2*h*
p**2*q**2*x**2*log(e + f*x)**2/2 - 3*a*b**2*h*p**2*q**2*x**2*log(e + f*x)/2
 + 3*a*b**2*h*p**2*q**2*x**2/4 + 3*a*b**2*h*p*q**2*x**2*log(d)*log(e + f*x)
 - 3*a*b**2*h*p*q**2*x**2*log(d)/2 + 3*a*b**2*h*p*q*x**2*log(c)*log(e + f*x
) - 3*a*b**2*h*p*q*x**2*log(c)/2 + 3*a*b**2*h*q**2*x**2*log(d)**2/2 + 3*a*b
**2*h*q*x**2*log(c)*log(d) + 3*a*b**2*h*x**2*log(c)**2/2 - b**3*e**2*h*p**3
*q**3*log(e + f*x)**3/(2*f**2) + 9*b**3*e**2*h*p**3*q**3*log(e + f*x)**2/(4
*f**2) - 21*b**3*e**2*h*p**3*q**3*log(e + f*x)/(4*f**2) - 3*b**3*e**2*h*p**
2*q**3*log(d)*log(e + f*x)**2/(2*f**2) + 9*b**3*e**2*h*p**2*q**3*log(d)*log
(e + f*x)/(2*f**2) - 3*b**3*e**2*h*p**2*q**2*log(c)*log(e + f*x)**2/(2*f**2
) + 9*b**3*e**2*h*p**2*q**2*log(c)*log(e + f*x)/(2*f**2) - 3*b**3*e**2*h*p*
q**3*log(d)**2*log(e + f*x)/(2*f**2) - 3*b**3*e**2*h*p*q**2*log(c)*log(d)*l
og(e + f*x)/f**2 - 3*b**3*e**2*h*p*q*log(c)**2*log(e + f*x)/(2*f**2) + b**3
*e*g*p**3*q**3*log(e + f*x)**3/f - 3*b**3*e*g*p**3*q**3*log(e + f*x)**2/f +
 6*b**3*e*g*p**3*q**3*log(e + f*x)/f + 3*b**3*e*g*p**2*q**3*log(d)*log(e +
f*x)**2/f - 6*b**3*e*g*p**2*q**3*log(d)*log(e + f*x)/f + 3*b**3*e*g*p**2*q*
*2*log(c)*log(e + f*x)**2/f - 6*b**3*e*g*p**2*q**2*log(c)*log(e + f*x)/f +
3*b**3*e*g*p*q**3*log(d)**2*log(e + f*x)/f + 6*b**3*e*g*p*q**2*log(c)*log(d
)*log(e + f*x)/f + 3*b**3*e*g*p*q*log(c)**2*log(e + f*x)/f + 3*b**3*e*h*p**
```

```
3*q**3*x*log(e + f*x)**2/(2*f) - 9*b**3*e*h*p**3*q**3*x*log(e + f*x)/(2*f)
+ 21*b**3*e*h*p**3*q**3*x/(4*f) + 3*b**3*e*h*p**2*q**3*x*log(d)*log(e + f*x
)/f - 9*b**3*e*h*p**2*q**3*x*log(d)/(2*f) + 3*b**3*e*h*p**2*q**2*x*log(c)*l
og(e + f*x)/f - 9*b**3*e*h*p**2*q**2*x*log(c)/(2*f) + 3*b**3*e*h*p*q**3*x*l
og(d)**2/(2*f) + 3*b**3*e*h*p*q**2*x*log(c)*log(d)/f + 3*b**3*e*h*p*q*x*log
(c)**2/(2*f) + b**3*g*p**3*q**3*x*log(e + f*x)**3 - 3*b**3*g*p**3*q**3*x*lo
g(e + f*x)**2 + 6*b**3*g*p**3*q**3*x*log(e + f*x) - 6*b**3*g*p**3*q**3*x +
3*b**3*g*p**2*q**3*x*log(d)*log(e + f*x)**2 - 6*b**3*g*p**2*q**3*x*log(d)*l
og(e + f*x) + 6*b**3*g*p**2*q**3*x*log(d) + 3*b**3*g*p**2*q**2*x*log(c)*log
(e + f*x)**2 - 6*b**3*g*p**2*q**2*x*log(c)*log(e + f*x) + 6*b**3*g*p**2*q**
2*x*log(c) + 3*b**3*g*p*q**3*x*log(d)**2*log(e + f*x) - 3*b**3*g*p*q**3*x*l
og(d)**2 + 6*b**3*g*p*q**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3*g*p*q**2*x
*log(c)*log(d) + 3*b**3*g*p*q*x*log(c)**2*log(e + f*x) - 3*b**3*g*p*q*x*log
(c)**2 + b**3*g*q**3*x*log(d)**3 + 3*b**3*g*q**2*x*log(c)*log(d)**2 + 3*b**
3*g*q*x*log(c)**2*log(d) + b**3*g*x*log(c)**3 + b**3*h*p**3*q**3*x**2*log(e
 + f*x)**3/2 - 3*b**3*h*p**3*q**3*x**2*log(e + f*x)**2/4 + 3*b**3*h*p**3*q*
*3*x**2*log(e + f*x)/4 - 3*b**3*h*p**3*q**3*x**2/8 + 3*b**3*h*p**2*q**3*x**
2*log(d)*log(e + f*x)**2/2 - 3*b**3*h*p**2*q**3*x**2*log(d)*log(e + f*x)/2
+ 3*b**3*h*p**2*q**3*x**2*log(d)/4 + 3*b**3*h*p**2*q**2*x**2*log(c)*log(e +
 f*x)**2/2 - 3*b**3*h*p**2*q**2*x**2*log(c)*log(e + f*x)/2 + 3*b**3*h*p**2*
q**2*x**2*log(c)/4 + 3*b**3*h*p*q**3*x**2*log(d)**2*log(e + f*x)/2 - 3*b**3
*h*p*q**3*x**2*log(d)**2/4 + 3*b**3*h*p*q**2*x**2*log(c)*log(d)*log(e + f*x
) - 3*b**3*h*p*q**2*x**2*log(c)*log(d)/2 + 3*b**3*h*p*q*x**2*log(c)**2*log(
e + f*x)/2 - 3*b**3*h*p*q*x**2*log(c)**2/4 + b**3*h*q**3*x**2*log(d)**3/2 +
 3*b**3*h*q**2*x**2*log(c)*log(d)**2/2 + 3*b**3*h*q*x**2*log(c)**2*log(d)/2
 + b**3*h*x**2*log(c)**3/2, Ne(f, 0)), ((a + b*log(c*(d*e**p)**q))**3*(g*x
+ h*x**2/2), True))
```

Giac [B] time = 1.45472, size = 3668, normalized size = 11.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*g*p^3*q^3*log(f*x + e)^3/f + 1/2*(f*x + e)^2*b^3*h*p^3*q^3*lo
g(f*x + e)^3/f^2 - (f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)^3/f^2 - 3*(f*x +
e)*b^3*g*p^3*q^3*log(f*x + e)^2/f - 3/4*(f*x + e)^2*b^3*h*p^3*q^3*log(f*x +
 e)^2/f^2 + 3*(f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)^2/f^2 + 3*(f*x + e)*b^
3*g*p^2*q^3*log(f*x + e)^2*log(d)/f + 3/2*(f*x + e)^2*b^3*h*p^2*q^3*log(f*x
 + e)^2*log(d)/f^2 - 3*(f*x + e)*b^3*h*p^2*q^3*e*log(f*x + e)^2*log(d)/f^2
+ 6*(f*x + e)*b^3*g*p^3*q^3*log(f*x + e)/f + 3/4*(f*x + e)^2*b^3*h*p^3*q^3*
log(f*x + e)/f^2 - 6*(f*x + e)*b^3*h*p^3*q^3*e*log(f*x + e)/f^2 + 3*(f*x +
e)*b^3*g*p^2*q^2*log(f*x + e)^2*log(c)/f + 3/2*(f*x + e)^2*b^3*h*p^2*q^2*lo
g(f*x + e)^2*log(c)/f^2 - 3*(f*x + e)*b^3*h*p^2*q^2*e*log(f*x + e)^2*log(c)
/f^2 - 6*(f*x + e)*b^3*g*p^2*q^3*log(f*x + e)*log(d)/f - 3/2*(f*x + e)^2*b^
3*h*p^2*q^3*log(f*x + e)*log(d)/f^2 + 6*(f*x + e)*b^3*h*p^2*q^3*e*log(f*x +
 e)*log(d)/f^2 + 3*(f*x + e)*b^3*g*p*q^3*log(f*x + e)*log(d)^2/f + 3/2*(f*x
 + e)^2*b^3*h*p*q^3*log(f*x + e)*log(d)^2/f^2 - 3*(f*x + e)*b^3*h*p*q^3*e*l
og(f*x + e)*log(d)^2/f^2 - 6*(f*x + e)*b^3*g*p^3*q^3/f - 3/8*(f*x + e)^2*b^
3*h*p^3*q^3/f^2 + 6*(f*x + e)*b^3*h*p^3*q^3*e/f^2 + 3*(f*x + e)*a*b^2*g*p^2
*q^2*log(f*x + e)^2/f + 3/2*(f*x + e)^2*a*b^2*h*p^2*q^2*log(f*x + e)^2/f^2
- 3*(f*x + e)*a*b^2*h*p^2*q^2*e*log(f*x + e)^2/f^2 - 6*(f*x + e)*b^3*g*p^2*
q^2*log(f*x + e)*log(c)/f - 3/2*(f*x + e)^2*b^3*h*p^2*q^2*log(f*x + e)*log(
c)/f^2 + 6*(f*x + e)*b^3*h*p^2*q^2*e*log(f*x + e)*log(c)/f^2 + 6*(f*x + e)*
b^3*g*p^2*q^3*log(d)/f + 3/4*(f*x + e)^2*b^3*h*p^2*q^3*log(d)/f^2 - 6*(f*x
```

```
+ e)*b^3*h*p^2*q^3*e*log(d)/f^2 + 6*(f*x + e)*b^3*g*p*q^2*log(f*x + e)*log(
c)*log(d)/f + 3*(f*x + e)^2*b^3*h*p*q^2*log(f*x + e)*log(c)*log(d)/f^2 - 6*
(f*x + e)*b^3*h*p*q^2*e*log(f*x + e)*log(c)*log(d)/f^2 - 3*(f*x + e)*b^3*g*
p*q^3*log(d)^2/f - 3/4*(f*x + e)^2*b^3*h*p*q^3*log(d)^2/f^2 + 3*(f*x + e)*b
^3*h*p*q^3*e*log(d)^2/f^2 + (f*x + e)*b^3*g*q^3*log(d)^3/f + 1/2*(f*x + e)^
2*b^3*h*q^3*log(d)^3/f^2 - (f*x + e)*b^3*h*q^3*e*log(d)^3/f^2 - 6*(f*x + e)
*a*b^2*g*p^2*q^2*log(f*x + e)/f - 3/2*(f*x + e)^2*a*b^2*h*p^2*q^2*log(f*x +
 e)/f^2 + 6*(f*x + e)*a*b^2*h*p^2*q^2*e*log(f*x + e)/f^2 + 6*(f*x + e)*b^3*
g*p^2*q^2*log(c)/f + 3/4*(f*x + e)^2*b^3*h*p^2*q^2*log(c)/f^2 - 6*(f*x + e)
*b^3*h*p^2*q^2*e*log(c)/f^2 + 3*(f*x + e)*b^3*g*p*q*log(f*x + e)*log(c)^2/f
 + 3/2*(f*x + e)^2*b^3*h*p*q*log(f*x + e)*log(c)^2/f^2 - 3*(f*x + e)*b^3*h*
p*q*e*log(f*x + e)*log(c)^2/f^2 + 6*(f*x + e)*a*b^2*g*p*q^2*log(f*x + e)*lo
g(d)/f + 3*(f*x + e)^2*a*b^2*h*p*q^2*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)*
a*b^2*h*p*q^2*e*log(f*x + e)*log(d)/f^2 - 6*(f*x + e)*b^3*g*p*q^2*log(c)*lo
g(d)/f - 3/2*(f*x + e)^2*b^3*h*p*q^2*log(c)*log(d)/f^2 + 6*(f*x + e)*b^3*h*
p*q^2*e*log(c)*log(d)/f^2 + 3*(f*x + e)*b^3*g*q^2*log(c)*log(d)^2/f + 3/2*(
f*x + e)^2*b^3*h*q^2*log(c)*log(d)^2/f^2 - 3*(f*x + e)*b^3*h*q^2*e*log(c)*l
og(d)^2/f^2 + 6*(f*x + e)*a*b^2*g*p^2*q^2/f + 3/4*(f*x + e)^2*a*b^2*h*p^2*q
^2/f^2 - 6*(f*x + e)*a*b^2*h*p^2*q^2*e/f^2 + 6*(f*x + e)*a*b^2*g*p*q*log(f*
x + e)*log(c)/f + 3*(f*x + e)^2*a*b^2*h*p*q*log(f*x + e)*log(c)/f^2 - 6*(f*
x + e)*a*b^2*h*p*q*e*log(f*x + e)*log(c)/f^2 - 3*(f*x + e)*b^3*g*p*q*log(c)
^2/f - 3/4*(f*x + e)^2*b^3*h*p*q*log(c)^2/f^2 + 3*(f*x + e)*b^3*h*p*q*e*log
(c)^2/f^2 - 6*(f*x + e)*a*b^2*g*p*q^2*log(d)/f - 3/2*(f*x + e)^2*a*b^2*h*p*
q^2*log(d)/f^2 + 6*(f*x + e)*a*b^2*h*p*q^2*e*log(d)/f^2 + 3*(f*x + e)*b^3*g
*q*log(c)^2*log(d)/f + 3/2*(f*x + e)^2*b^3*h*q*log(c)^2*log(d)/f^2 - 3*(f*x
 + e)*b^3*h*q*e*log(c)^2*log(d)/f^2 + 3*(f*x + e)*a*b^2*g*q^2*log(d)^2/f +
3/2*(f*x + e)^2*a*b^2*h*q^2*log(d)^2/f^2 - 3*(f*x + e)*a*b^2*h*q^2*e*log(d)
^2/f^2 + 3*(f*x + e)*a^2*b*g*p*q*log(f*x + e)/f + 3/2*(f*x + e)^2*a^2*b*h*p
*q*log(f*x + e)/f^2 - 3*(f*x + e)*a^2*b*h*p*q*e*log(f*x + e)/f^2 - 6*(f*x +
 e)*a*b^2*g*p*q*log(c)/f - 3/2*(f*x + e)^2*a*b^2*h*p*q*log(c)/f^2 + 6*(f*x
+ e)*a*b^2*h*p*q*e*log(c)/f^2 + (f*x + e)*b^3*g*log(c)^3/f + 1/2*(f*x + e)^
2*b^3*h*log(c)^3/f^2 - (f*x + e)*b^3*h*e*log(c)^3/f^2 + 6*(f*x + e)*a*b^2*g
*q*log(c)*log(d)/f + 3*(f*x + e)^2*a*b^2*h*q*log(c)*log(d)/f^2 - 6*(f*x + e
)*a*b^2*h*q*e*log(c)*log(d)/f^2 - 3*(f*x + e)*a^2*b*g*p*q/f - 3/4*(f*x + e)
^2*a^2*b*h*p*q/f^2 + 3*(f*x + e)*a^2*b*h*p*q*e/f^2 + 3*(f*x + e)*a*b^2*g*lo
g(c)^2/f + 3/2*(f*x + e)^2*a*b^2*h*log(c)^2/f^2 - 3*(f*x + e)*a*b^2*h*e*log
(c)^2/f^2 + 3*(f*x + e)*a^2*b*g*q*log(d)/f + 3/2*(f*x + e)^2*a^2*b*h*q*log(
d)/f^2 - 3*(f*x + e)*a^2*b*h*q*e*log(d)/f^2 + 3*(f*x + e)*a^2*b*g*log(c)/f
+ 3/2*(f*x + e)^2*a^2*b*h*log(c)/f^2 - 3*(f*x + e)*a^2*b*h*e*log(c)/f^2 + (
f*x + e)*a^3*g/f + 1/2*(f*x + e)^2*a^3*h/f^2 - (f*x + e)*a^3*h*e/f^2
```

3.437 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\,dx$

Optimal. Leaf size=121

$$6ab^2p^2q^2x-\frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{6b^3p^2q^2(e+fx)\log\left(\right.}{f}$$

```
[Out] 6*a*b^2*p^2*q^2*x - 6*b^3*p^3*q^3*x + (6*b^3*p^2*q^2*(e + f*x)*Log[c*(d*(e
+ f*x)^p)^q])/f - (3*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f
```

Rubi [A] time = 0.141472, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2296, 2295, 2445}

$$6ab^2p^2q^2x-\frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{6b^3p^2q^2(e+fx)\log\left(\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```


```
[Out] 6*a*b^2*p^2*q^2*x - 6*b^3*p^3*q^3*x + (6*b^3*p^2*q^2*(e + f*x)*Log[c*(d*(e
+ f*x)^p)^q])/f - (3*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/f
+ ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^qx^{pq}\right)\right)^3 dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)\right.\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \left(a+b\log\left(cd\right.\right.\right.}{f}\right.$$
$$= -\frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{f}$$
$$= 6ab^2p^2q^2x - \frac{3bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} + \frac{(e+fx)\left(a+b\log\left(\right.\right.}{f}$$
$$= 6ab^2p^2q^2x - 6b^3p^3q^3x + \frac{6b^3p^2q^2(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} - \frac{3bpq(e+fx)\left(\right.}{}$$

Mathematica [A] time = 0.0248021, size = 100, normalized size = 0.83

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 - 3bpq\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 - 2bpq\left(fx(a-bpq)+b(e+fx)\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3 - 3*b*p*q*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^p)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])))/f
```

Maple [F] time = 0.274, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [B] time = 1.12344, size = 428, normalized size = 3.54

$$-3\,a^2bfpq\left(\frac{x}{f} - \frac{e\log\left(fx+e\right)}{f^2}\right) + b^3x\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^3 + 3\,ab^2x\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2 + 3\,a^2bx\log\left(\left(\left(fx+e\right)^pd\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -3*a^2*b*f*p*q*(x/f - e*log(f*x + e)/f^2) + b^3*x*log(((f*x + e)^p*d)^q*c)^
3 + 3*a*b^2*x*log(((f*x + e)^p*d)^q*c)^2 + 3*a^2*b*x*log(((f*x + e)^p*d)^q*
c) - 3*(2*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*lo
g(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p^2*q^2/f)*a*b^2 - (3*f*p*q*(x/f -
 e*log(f*x + e)/f^2)*log(((f*x + e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*
log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^
2 - 2*f*x + 2*e*log(f*x + e))*p*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*b^3
+ a^3*x
```

Fricas [B] time = 2.07231, size = 1374, normalized size = 11.36

$$\frac{b^3fq^3x\log(d)^3 + b^3fx\log(c)^3 + \left(b^3fp^3q^3x + b^3ep^3q^3\right)\log\left(fx+e\right)^3 - 3\left(b^3fpq - ab^2f\right)x\log(c)^2 - 3\left(b^3ep^3q^3 - ab^2ep^2q\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] (b^3*f*q^3*x*log(d)^3 + b^3*f*x*log(c)^3 + (b^3*f*p^3*q^3*x + b^3*e*p^3*q^3
)*log(f*x + e)^3 - 3*(b^3*f*p*q - a*b^2*f)*x*log(c)^2 - 3*(b^3*e*p^3*q^3 -
a*b^2*e*p^2*q^2 + (b^3*f*p^3*q^3 - a*b^2*f*p^2*q^2)*x - (b^3*f*p^2*q^2*x +
b^3*e*p^2*q^2)*log(c) - (b^3*f*p^2*q^3*x + b^3*e*p^2*q^3)*log(d))*log(f*x +
 e)^2 + 3*(2*b^3*f*p^2*q^2 - 2*a*b^2*f*p*q + a^2*b*f)*x*log(c) + 3*(b^3*f*q
^2*x*log(c) - (b^3*f*p*q^3 - a*b^2*f*q^2)*x)*log(d)^2 - (6*b^3*f*p^3*q^3 -
6*a*b^2*f*p^2*q^2 + 3*a^2*b*f*p*q - a^3*f)*x + 3*(2*b^3*e*p^3*q^3 - 2*a*b^2
*e*p^2*q^2 + a^2*b*e*p*q + (b^3*f*p*q*x + b^3*e*p*q)*log(c)^2 + (b^3*f*p*q^
3*x + b^3*e*p*q^3)*log(d)^2 + (2*b^3*f*p^3*q^3 - 2*a*b^2*f*p^2*q^2 + a^2*b*
f*p*q)*x - 2*(b^3*e*p^2*q^2 - a*b^2*e*p*q + (b^3*f*p^2*q^2 - a*b^2*f*p*q)*x
)*log(c) - 2*(b^3*e*p^2*q^3 - a*b^2*e*p*q^2 + (b^3*f*p^2*q^3 - a*b^2*f*p*q^
2)*x - (b^3*f*p*q^2*x + b^3*e*p*q^2)*log(c))*log(d))*log(f*x + e) + 3*(b^3*
f*q*x*log(c)^2 - 2*(b^3*f*p*q^2 - a*b^2*f*q)*x*log(c) + (2*b^3*f*p^2*q^3 -
2*a*b^2*f*p*q^2 + a^2*b*f*q)*x)*log(d))/f
```

Sympy [A] time = 9.30581, size = 1023, normalized size = 8.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Piecewise((a**3*x + 3*a**2*b*e*p*q*log(e + f*x)/f + 3*a**2*b*p*q*x*log(e +
f*x) - 3*a**2*b*p*q*x + 3*a**2*b*q*x*log(d) + 3*a**2*b*x*log(c) + 3*a*b**2*
e*p**2*q**2*log(e + f*x)**2/f - 6*a*b**2*e*p**2*q**2*log(e + f*x)/f + 6*a*b
**2*e*p*q**2*log(d)*log(e + f*x)/f + 6*a*b**2*e*p*q*log(c)*log(e + f*x)/f +
 3*a*b**2*p**2*q**2*x*log(e + f*x)**2 - 6*a*b**2*p**2*q**2*x*log(e + f*x) +
 6*a*b**2*p**2*q**2*x + 6*a*b**2*p*q**2*x*log(d)*log(e + f*x) - 6*a*b**2*p*
q**2*x*log(d) + 6*a*b**2*p*q*x*log(c)*log(e + f*x) - 6*a*b**2*p*q*x*log(c)
+ 3*a*b**2*q**2*x*log(d)**2 + 6*a*b**2*q*x*log(c)*log(d) + 3*a*b**2*x*log(c
)**2 + b**3*e*p**3*q**3*log(e + f*x)**3/f - 3*b**3*e*p**3*q**3*log(e + f*x)
**2/f + 6*b**3*e*p**3*q**3*log(e + f*x)/f + 3*b**3*e*p**2*q**3*log(d)*log(e
 + f*x)**2/f - 6*b**3*e*p**2*q**3*log(d)*log(e + f*x)/f + 3*b**3*e*p**2*q**
```

```
2*log(c)*log(e + f*x)**2/f - 6*b**3*e*p**2*q**2*log(c)*log(e + f*x)/f + 3*b
**3*e*p*q**3*log(d)**2*log(e + f*x)/f + 6*b**3*e*p*q**2*log(c)*log(d)*log(e
 + f*x)/f + 3*b**3*e*p*q*log(c)**2*log(e + f*x)/f + b**3*p**3*q**3*x*log(e
+ f*x)**3 - 3*b**3*p**3*q**3*x*log(e + f*x)**2 + 6*b**3*p**3*q**3*x*log(e +
 f*x) - 6*b**3*p**3*q**3*x + 3*b**3*p**2*q**3*x*log(d)*log(e + f*x)**2 - 6*
b**3*p**2*q**3*x*log(d)*log(e + f*x) + 6*b**3*p**2*q**3*x*log(d) + 3*b**3*p
**2*q**2*x*log(c)*log(e + f*x)**2 - 6*b**3*p**2*q**2*x*log(c)*log(e + f*x)
+ 6*b**3*p**2*q**2*x*log(c) + 3*b**3*p*q**3*x*log(d)**2*log(e + f*x) - 3*b*
*3*p*q**3*x*log(d)**2 + 6*b**3*p*q**2*x*log(c)*log(d)*log(e + f*x) - 6*b**3
*p*q**2*x*log(c)*log(d) + 3*b**3*p*q*x*log(c)**2*log(e + f*x) - 3*b**3*p*q*
x*log(c)**2 + b**3*q**3*x*log(d)**3 + 3*b**3*q**2*x*log(c)*log(d)**2 + 3*b*
*3*q*x*log(c)**2*log(d) + b**3*x*log(c)**3, Ne(f, 0)), (x*(a + b*log(c*(d*e
**p)**q))**3, True))
```

Giac [B] time = 1.31845, size = 1110, normalized size = 9.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^3*p^3*q^3*log(f*x + e)^3/f - 3*(f*x + e)*b^3*p^3*q^3*log(f*x +
e)^2/f + 3*(f*x + e)*b^3*p^2*q^3*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^3*
p^3*q^3*log(f*x + e)/f + 3*(f*x + e)*b^3*p^2*q^2*log(f*x + e)^2*log(c)/f -
6*(f*x + e)*b^3*p^2*q^3*log(f*x + e)*log(d)/f + 3*(f*x + e)*b^3*p*q^3*log(f
*x + e)*log(d)^2/f - 6*(f*x + e)*b^3*p^3*q^3/f + 3*(f*x + e)*a*b^2*p^2*q^2*
log(f*x + e)^2/f - 6*(f*x + e)*b^3*p^2*q^2*log(f*x + e)*log(c)/f + 6*(f*x +
 e)*b^3*p^2*q^3*log(d)/f + 6*(f*x + e)*b^3*p*q^2*log(f*x + e)*log(c)*log(d)
/f - 3*(f*x + e)*b^3*p*q^3*log(d)^2/f + (f*x + e)*b^3*q^3*log(d)^3/f - 6*(f
*x + e)*a*b^2*p^2*q^2*log(f*x + e)/f + 6*(f*x + e)*b^3*p^2*q^2*log(c)/f + 3
*(f*x + e)*b^3*p*q*log(f*x + e)*log(c)^2/f + 6*(f*x + e)*a*b^2*p*q^2*log(f*
x + e)*log(d)/f - 6*(f*x + e)*b^3*p*q^2*log(c)*log(d)/f + 3*(f*x + e)*b^3*q
^2*log(c)*log(d)^2/f + 6*(f*x + e)*a*b^2*p^2*q^2/f + 6*(f*x + e)*a*b^2*p*q*
log(f*x + e)*log(c)/f - 3*(f*x + e)*b^3*p*q*log(c)^2/f - 6*(f*x + e)*a*b^2*
p*q^2*log(d)/f + 3*(f*x + e)*b^3*q*log(c)^2*log(d)/f + 3*(f*x + e)*a*b^2*q^
2*log(d)^2/f + 3*(f*x + e)*a^2*b*p*q*log(f*x + e)/f - 6*(f*x + e)*a*b^2*p*q
*log(c)/f + (f*x + e)*b^3*log(c)^3/f + 6*(f*x + e)*a*b^2*q*log(c)*log(d)/f
- 3*(f*x + e)*a^2*b*p*q/f + 3*(f*x + e)*a*b^2*log(c)^2/f + 3*(f*x + e)*a^2*
b*q*log(d)/f + 3*(f*x + e)*a^2*b*log(c)/f + (f*x + e)*a^3/f
```

3.438 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=177

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rubi [A] time = 0.412099, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx\right.\right.}{e+\ldots}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \frac{(a+b\log(c\ldots}{\ldots}\right.}{\ldots}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\ldots}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\ldots}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\ldots}{h}$$

Mathematica [B] time = 0.264883, size = 646, normalized size = 3.65

$$-6b^2p^2q^2\text{PolyLog}\left(3,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+3bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2+6$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] + 3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLo
g[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x
)^p)^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*p^3*q^3*PolyLog[4
, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F] time = 0.715, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3\log\left(hx+g\right)}{h}+\int\frac{b^3\log\left(\left(\left(fx+e\right)^p\right)^q\right)^3+3\left(\log\left(c\right)^2+2\,\log\left(c\right)\log\left(d^q\right)+\log\left(d^q\right)^2\right)ab^2+\left(\log\left(c\right)^3+3\,\log\left(c\right)^2\log\left(d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^3*log(h*x + g)/h + integrate((b^3*log(((f*x + e)^p)^q)^3 + 3*(log(c)^2 +
2*log(c)*log(d^q) + log(d^q)^2)*a*b^2 + (log(c)^3 + 3*log(c)^2*log(d^q) + 3
*log(c)*log(d^q)^2 + log(d^q)^3)*b^3 + 3*a^2*b*(log(c) + log(d^q)) + 3*(b^3
*(log(c) + log(d^q)) + a*b^2)*log(((f*x + e)^p)^q)^2 + 3*((log(c)^2 + 2*log
(c)*log(d^q) + log(d^q)^2)*b^3 + 2*a*b^2*(log(c) + log(d^q)) + a^2*b)*log((
```

```
(f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

3.439 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^2}\,dx$

Optimal. Leaf size=209

$$-\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{6b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{3bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(\ldots\right.}{h(\ldots}$$

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*g - e*h)*(g + h*x)) - (3
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLo
g[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (6*b^3*f*p^3*q^3*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h))
```

Rubi [A] time = 0.365659, antiderivative size = 209, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2397, 2396, 2433, 2374, 6589, 2445}

$$-\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}+\frac{6b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)}-\frac{3bfpq\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(\ldots\right.}{h(\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^2,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*g - e*h)*(g + h*x)) - (3
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLo
g[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (6*b^3*f*p^3*q^3*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h))
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(3bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \log}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \log}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \log}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(fg-eh)(g+hx)} - \frac{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \log}{h(fg-eh)}$$

Mathematica [B] time = 0.585868, size = 444, normalized size = 2.12

$$\frac{3b^2p^2q^2\left(\log(e+fx)\left(h(e+fx)\log(e+fx)-2f(g+hx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)-2f(g+hx)\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\right)\left(a+b\log\left(c\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^2,x]
```

```
[Out] (-3*b*(f*g - e*h)*p*q*Log[e + f*x]*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e
+ f*x)^p)^q])^2 + 3*b*f*p*q*(g + h*x)*Log[e + f*x]*(a - b*p*q*Log[e + f*x]
+ b*Log[c*(d*(e + f*x)^p)^q])^2 - (f*g - e*h)*(a - b*p*q*Log[e + f*x] + b*L
og[c*(d*(e + f*x)^p)^q])^3 - 3*b*f*p*q*(g + h*x)*(a - b*p*q*Log[e + f*x] +
b*Log[c*(d*(e + f*x)^p)^q])^2*Log[g + h*x] + 3*b^2*p^2*q^2*(a - b*p*q*Log[e
 + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(Log[e + f*x]*(h*(e + f*x)*Log[e + f*
x] - 2*f*(g + h*x)*Log[(f*(g + h*x))/(f*g - e*h)]) - 2*f*(g + h*x)*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)]) + b^3*p^3*q^3*(Log[e + f*x]^2*(h*(e + f*x
)*Log[e + f*x] - 3*f*(g + h*x)*Log[(f*(g + h*x))/(f*g - e*h)]) - 6*f*(g + h
*x)*Log[e + f*x]*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] + 6*f*(g + h*x)*P
olyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]))/(h*(f*g - e*h)*(g + h*x))
```

Maple [F] time = 0.674, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 3*a^2*b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2))
 - b^3*log(((f*x + e)^p)^q)^3/(h^2*x + g*h) - 3*a^2*b*log(((f*x + e)^p*d)^q
*c)/(h^2*x + g*h) - a^3/(h^2*x + g*h) + integrate((3*(e*h*log(c)^2 + 2*e*h*
log(c)*log(d^q) + e*h*log(d^q)^2)*a*b^2 + (e*h*log(c)^3 + 3*e*h*log(c)^2*lo
g(d^q) + 3*e*h*log(c)*log(d^q)^2 + e*h*log(d^q)^3)*b^3 + 3*(a*b^2*e*h + (f*
g*p*q + e*h*log(c) + e*h*log(d^q))*b^3 + (a*b^2*f*h + (f*h*p*q + f*h*log(c)
 + f*h*log(d^q))*b^3)*x)*log(((f*x + e)^p)^q)^2 + (3*(f*h*log(c)^2 + 2*f*h*
log(c)*log(d^q) + f*h*log(d^q)^2)*a*b^2 + (f*h*log(c)^3 + 3*f*h*log(c)^2*lo
g(d^q) + 3*f*h*log(c)*log(d^q)^2 + f*h*log(d^q)^3)*b^3)*x + 3*(2*(e*h*log(c
) + e*h*log(d^q))*a*b^2 + (e*h*log(c)^2 + 2*e*h*log(c)*log(d^q) + e*h*log(d
^q)^2)*b^3 + (2*(f*h*log(c) + f*h*log(d^q))*a*b^2 + (f*h*log(c)^2 + 2*f*h*l
```

```
og(c)*log(d^q) + f*h*log(d^q)^2)*b^3)*x)*log(((f*x + e)^p)^q))/(f*h^3*x^3 +
 e*g^2*h + (2*f*g*h^2 + e*h^3)*x^2 + (f*g^2*h + 2*e*g*h^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{h^2x^2+2\,ghx+g^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g)^2, x)
```

3.440 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^3}\,dx$

Optimal. Leaf size=376

$$\frac{3b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{fg-eh}{h(e+fx)}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}(}{h(fg-eh}$$

```
[Out] (-3*b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*(f*g - e*h)^2*
(g + h*x)) - (a + b*Log[c*(d*(e + f*x)^p)^q])^3/(2*h*(g + h*x)^2) + (3*b^2*
f^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)]
)/(h*(f*g - e*h)^2) - (3*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[1
 + (f*g - e*h)/(h*(e + f*x))])/(2*h*(f*g - e*h)^2) + (3*b^2*f^2*p^2*q^2*(a
+ b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((f*g - e*h)/(h*(e + f*x)))])/(h*
(f*g - e*h)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))
])/(h*(f*g - e*h)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[3, -((f*g - e*h)/(h*(e +
f*x)))])/(h*(f*g - e*h)^2)
```

Rubi [A] time = 1.38972, antiderivative size = 408, normalized size of antiderivative = 1.09, number of steps used = 13, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2398, 2411, 2347, 2344, 2302, 30, 2317, 2374, 6589, 2318, 2391, 2445}

$$-\frac{3b^2f^2p^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h(fg-eh)^2}+\frac{3b^3f^2p^3q^3\text{PolyLog}}{h(fg-e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^3,x]
```

```
[Out] (-3*b*f*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*(f*g - e*h)^2*
(g + h*x)) + (f^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*h*(f*g - e*h)^2) -
 (a + b*Log[c*(d*(e + f*x)^p)^q])^3/(2*h*(g + h*x)^2) + (3*b^2*f^2*p^2*q^2*
(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*(f*g -
e*h)^2) - (3*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))
/(f*g - e*h)])/(2*h*(f*g - e*h)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[2, -((h*(e
+ f*x))/(f*g - e*h))])/(h*(f*g - e*h)^2) - (3*b^2*f^2*p^2*q^2*(a + b*Log[c*
(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h
)^2) + (3*b^3*f^2*p^3*q^3*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g
 - e*h)^2)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
```

```
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2318

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_))^2, x_Sy
mbol] :> Simp[(x*(a + b*Log[c*x^n])^p)/(d*(d + e*x)), x] - Dist[(b*n*p)/d,
Int[(a + b*Log[c*x^n])^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n
, p}, x] && GtQ[p, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)^3}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} + \text{Subst}\left(\frac{(3bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(e+fx)(g+hx)^2}\,dx}{2h}, cd^q(e \cdots\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} + \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \frac{\left(a+b\log\left(cd^qx^{pq}\right)\right)^2}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\,dx, x, e + \cdots\right.}{2h}\right.$$

$$= -\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \frac{\left(a+b\log\left(cd^qx^{pq}\right)\right)^2}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^2}\,dx, x, e + \cdots\right.}{2(fg-eh)}\right.$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} - \text{S}\cdots$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(g+hx)^2} + \cdots$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(fg-eh)^2} \cdots$$

$$= -\frac{3bfpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{2(fg-eh)^2(g+hx)} + \frac{f^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{2h(fg-eh)^2} \cdots$$

Mathematica [A] time = 1.03877, size = 660, normalized size = 1.76

$$-\frac{3b^2p^2q^2\left(2f^2(g+hx)^2\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)-2f^2(g+hx)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)+h(e+fx)\log^2(e+fx)(eh-f(2g+hx))+2f\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x)^3,x]
```

```
[Out] -(-3*b*f*(f*g - e*h)*p*q*(g + h*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e
+ f*x)^p)^q])^2 + 3*b*(f*g - e*h)^2*p*q*Log[e + f*x]*(a - b*p*q*Log[e + f*x
] + b*Log[c*(d*(e + f*x)^p)^q])^2 - 3*b*f^2*p*q*(g + h*x)^2*Log[e + f*x]*(a
 - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + (f*g - e*h)^2*(a -
b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^3 + 3*b*f^2*p*q*(g + h*x)^
2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[g + h*x] + 3*
b^2*p^2*q^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])*(h*(e + f
*x)*(e*h - f*(2*g + h*x))*Log[e + f*x]^2 - 2*f^2*(g + h*x)^2*Log[(f*(g + h*
x))/(f*g - e*h)] + 2*f*(g + h*x)*Log[e + f*x]*(h*(e + f*x) + f*(g + h*x)*Lo
g[(f*(g + h*x))/(f*g - e*h)]) + 2*f^2*(g + h*x)^2*PolyLog[2, (h*(e + f*x))/
(-(f*g) + e*h)]) + b^3*p^3*q^3*(h*(e + f*x)*(e*h - f*(2*g + h*x))*Log[e + f
*x]^3 + 3*f*(g + h*x)*Log[e + f*x]^2*(h*(e + f*x) + f*(g + h*x)*Log[(f*(g +
 h*x))/(f*g - e*h)]) - 6*f^2*(g + h*x)^2*Log[e + f*x]*(Log[(f*(g + h*x))/(f
*g - e*h)] - PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) - 6*f^2*(g + h*x)^2*
PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*f^2*(g + h*x)^2*PolyLog[3, (h*
(e + f*x))/(-(f*g) + e*h)]))/(2*h*(f*g - e*h)^2*(g + h*x)^2)
```

Maple [F] time = 0.681, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="maxima")
```

```
[Out] 3/2*a^2*b*f*p*q*(f*log(f*x + e)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) - f*log
(h*x + g)/(f^2*g^2*h - 2*e*f*g*h^2 + e^2*h^3) + 1/(f*g^2*h - e*g*h^2 + (f*g
*h^2 - e*h^3)*x)) - 1/2*b^3*log(((f*x + e)^p)^q)^3/(h^3*x^2 + 2*g*h^2*x + g
^2*h) - 3/2*a^2*b*log(((f*x + e)^p*d)^q*c)/(h^3*x^2 + 2*g*h^2*x + g^2*h) -
1/2*a^3/(h^3*x^2 + 2*g*h^2*x + g^2*h) + integrate(1/2*(6*(e*h*log(c)^2 + 2*
e*h*log(c)*log(d^q) + e*h*log(d^q)^2)*a*b^2 + 2*(e*h*log(c)^3 + 3*e*h*log(c
)^2*log(d^q) + 3*e*h*log(c)*log(d^q)^2 + e*h*log(d^q)^3)*b^3 + 3*(2*a*b^2*e
*h + (f*g*p*q + 2*e*h*log(c) + 2*e*h*log(d^q))*b^3 + (2*a*b^2*f*h + (f*h*p*
q + 2*f*h*log(c) + 2*f*h*log(d^q))*b^3)*x)*log(((f*x + e)^p)^q)^2 + 2*(3*(f
*h*log(c)^2 + 2*f*h*log(c)*log(d^q) + f*h*log(d^q)^2)*a*b^2 + (f*h*log(c)^3
 + 3*f*h*log(c)^2*log(d^q) + 3*f*h*log(c)*log(d^q)^2 + f*h*log(d^q)^3)*b^3)
*x + 6*(2*(e*h*log(c) + e*h*log(d^q))*a*b^2 + (e*h*log(c)^2 + 2*e*h*log(c)*
```

```
log(d^q) + e*h*log(d^q)^2)*b^3 + (2*(f*h*log(c) + f*h*log(d^q))*a*b^2 + (f*
h*log(c)^2 + 2*f*h*log(c)*log(d^q) + f*h*log(d^q)^2)*b^3)*x)*log(((f*x + e)
^p)^q))/(f*h^4*x^4 + e*g^3*h + (3*f*g*h^3 + e*h^4)*x^3 + 3*(f*g^2*h^2 + e*g
*h^3)*x^2 + (f*g^3*h + 3*e*g^2*h^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a^3}{h^3x^3 + 3\,gh^2x^2 + 3\,g^2hx + g^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h^3*x^3 + 3*g*h^2*x^2 + 3*g^2
*h*x + g^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a\right)^3}{\left(hx+g\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)^3,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g)^3, x)
```

3.441 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\,dx$

Optimal. Leaf size=160

$$\frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-24ab^3p^3q^3x-\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{(e+fx)}{}$$

```
[Out] -24*a*b^3*p^3*q^3*x + 24*b^4*p^4*q^4*x - (24*b^4*p^3*q^3*(e + f*x)*Log[c*(d
*(e + f*x)^p)^q])/f + (12*b^2*p^2*q^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/f - (4*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/f
```

Rubi [A] time = 0.201387, antiderivative size = 160, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2296, 2295, 2445}

$$\frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f}-24ab^3p^3q^3x-\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f}+\frac{(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4,x]
```

```
[Out] -24*a*b^3*p^3*q^3*x + 24*b^4*p^4*q^4*x - (24*b^4*p^3*q^3*(e + f*x)*Log[c*(d
*(e + f*x)^p)^q])/f + (12*b^2*p^2*q^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/f - (4*b*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/f + ((e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^4\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$
$$= \text{Subst}\left(\frac{\text{Subst}\left(\int (a+b\log(cd^qx^{pq}))^4\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$
$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{f} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int (a+b\log(cd^qx^p\right.}{f}\right.$$
$$= -\frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{f}$$
$$= \frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \frac{4bpq(e+fx)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{f}$$
$$= -24ab^3p^3q^3x + \frac{12b^2p^2q^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{f} - \frac{4bpq(e+fx)\left(a\right.}{}$$
$$= -24ab^3p^3q^3x + 24b^4p^4q^4x - \frac{24b^4p^3q^3(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f} + \frac{12b^2p^2q^2(e}{}$$

Mathematica [A] time = 0.0575396, size = 132, normalized size = 0.82

$$\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4 - 4bpq\left((e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 - 3bpq\left((e+fx)\left(a+b\log\left(c\left(d(e+\right.\right.\right.\right.\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4,x]
```

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4 - 4*b*p*q*((e + f*x)*(a + b*L
og[c*(d*(e + f*x)^p)^q])^3 - 3*b*p*q*((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2 - 2*b*p*q*(f*(a - b*p*q)*x + b*(e + f*x)*Log[c*(d*(e + f*x)^p)^q]))
))/f
```

Maple [F] time = 0.282, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4,x)
```

Maxima [B] time = 1.24179, size = 755, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="maxima")

```
[Out] b^4*x*log(((f*x + e)^p*d)^q*c)^4 - 4*a^3*b*f*p*q*(x/f - e*log(f*x + e)/f^2)
 + 4*a*b^3*x*log(((f*x + e)^p*d)^q*c)^3 + 6*a^2*b^2*x*log(((f*x + e)^p*d)^q
*c)^2 + 4*a^3*b*x*log(((f*x + e)^p*d)^q*c) - 6*(2*f*p*q*(x/f - e*log(f*x +
e)/f^2)*log(((f*x + e)^p*d)^q*c) + (e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x
+ e))*p^2*q^2/f)*a^2*b^2 - 4*(3*f*p*q*(x/f - e*log(f*x + e)/f^2)*log(((f*x
+ e)^p*d)^q*c)^2 - ((e*log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*lo
g(f*x + e))*p^2*q^2/f^2 - 3*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x + e))*p
*q*log(((f*x + e)^p*d)^q*c)/f^2)*f*p*q)*a*b^3 - (4*f*p*q*(x/f - e*log(f*x +
 e)/f^2)*log(((f*x + e)^p*d)^q*c)^3 + (((e*log(f*x + e)^4 + 4*e*log(f*x + e
)^3 + 12*e*log(f*x + e)^2 - 24*f*x + 24*e*log(f*x + e))*p^2*q^2/f^3 - 4*(e*
log(f*x + e)^3 + 3*e*log(f*x + e)^2 - 6*f*x + 6*e*log(f*x + e))*p*q*log(((f
*x + e)^p*d)^q*c)/f^3)*f*p*q + 6*(e*log(f*x + e)^2 - 2*f*x + 2*e*log(f*x +
e))*p*q*log(((f*x + e)^p*d)^q*c)^2/f^2)*f*p*q)*b^4 + a^4*x
```

Fricas [B] time = 2.27264, size = 2973, normalized size = 18.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="fricas")

```
[Out] (b^4*f*q^4*x*log(d)^4 + b^4*f*x*log(c)^4 + (b^4*f*p^4*q^4*x + b^4*e*p^4*q^4
)*log(f*x + e)^4 - 4*(b^4*f*p*q - a*b^3*f)*x*log(c)^3 - 4*(b^4*e*p^4*q^4 -
a*b^3*e*p^3*q^3 + (b^4*f*p^4*q^4 - a*b^3*f*p^3*q^3)*x - (b^4*f*p^3*q^3*x +
b^4*e*p^3*q^3)*log(c) - (b^4*f*p^3*q^4*x + b^4*e*p^3*q^4)*log(d))*log(f*x +
 e)^3 + 6*(2*b^4*f*p^2*q^2 - 2*a*b^3*f*p*q + a^2*b^2*f)*x*log(c)^2 + 4*(b^4
*f*q^3*x*log(c) - (b^4*f*p*q^4 - a*b^3*f*q^3)*x)*log(d)^3 + 6*(2*b^4*e*p^4*
q^4 - 2*a*b^3*e*p^3*q^3 + a^2*b^2*e*p^2*q^2 + (b^4*f*p^2*q^2*x + b^4*e*p^2*
q^2)*log(c)^2 + (b^4*f*p^2*q^4*x + b^4*e*p^2*q^4)*log(d)^2 + (2*b^4*f*p^4*q
^4 - 2*a*b^3*f*p^3*q^3 + a^2*b^2*f*p^2*q^2)*x - 2*(b^4*e*p^3*q^3 - a*b^3*e*
p^2*q^2 + (b^4*f*p^3*q^3 - a*b^3*f*p^2*q^2)*x)*log(c) - 2*(b^4*e*p^3*q^4 -
a*b^3*e*p^2*q^3 + (b^4*f*p^3*q^4 - a*b^3*f*p^2*q^3)*x - (b^4*f*p^2*q^3*x +
b^4*e*p^2*q^3)*log(c))*log(d))*log(f*x + e)^2 - 4*(6*b^4*f*p^3*q^3 - 6*a*b^
3*f*p^2*q^2 + 3*a^2*b^2*f*p*q - a^3*b*f)*x*log(c) + 6*(b^4*f*q^2*x*log(c)^2
 - 2*(b^4*f*p*q^3 - a*b^3*f*q^2)*x*log(c) + (2*b^4*f*p^2*q^4 - 2*a*b^3*f*p*
q^3 + a^2*b^2*f*q^2)*x)*log(d)^2 + (24*b^4*f*p^4*q^4 - 24*a*b^3*f*p^3*q^3 +
 12*a^2*b^2*f*p^2*q^2 - 4*a^3*b*f*p*q + a^4*f)*x - 4*(6*b^4*e*p^4*q^4 - 6*a
*b^3*e*p^3*q^3 + 3*a^2*b^2*e*p^2*q^2 - a^3*b*e*p*q - (b^4*f*p*q*x + b^4*e*p
*q)*log(c)^3 - (b^4*f*p*q^4*x + b^4*e*p*q^4)*log(d)^3 + 3*(b^4*e*p^2*q^2 -
a*b^3*e*p*q + (b^4*f*p^2*q^2 - a*b^3*f*p*q)*x)*log(c)^2 + 3*(b^4*e*p^2*q^4
- a*b^3*e*p*q^3 + (b^4*f*p^2*q^4 - a*b^3*f*p*q^3)*x - (b^4*f*p*q^3*x + b^4*
e*p*q^3)*log(c))*log(d)^2 + (6*b^4*f*p^4*q^4 - 6*a*b^3*f*p^3*q^3 + 3*a^2*b^
2*f*p^2*q^2 - a^3*b*f*p*q)*x - 3*(2*b^4*e*p^3*q^3 - 2*a*b^3*e*p^2*q^2 + a^2
*b^2*e*p*q + (2*b^4*f*p^3*q^3 - 2*a*b^3*f*p^2*q^2 + a^2*b^2*f*p*q)*x)*log(c
) - 3*(2*b^4*e*p^3*q^4 - 2*a*b^3*e*p^2*q^3 + a^2*b^2*e*p*q^2 + (b^4*f*p*q^2
*x + b^4*e*p*q^2)*log(c)^2 + (2*b^4*f*p^3*q^4 - 2*a*b^3*f*p^2*q^3 + a^2*b^2
*f*p*q^2)*x - 2*(b^4*e*p^2*q^3 - a*b^3*e*p*q^2 + (b^4*f*p^2*q^3 - a*b^3*f*p
*q^2)*x)*log(c))*log(d))*log(f*x + e) + 4*(b^4*f*q*x*log(c)^3 - 3*(b^4*f*p*
q^2 - a*b^3*f*q)*x*log(c)^2 + 3*(2*b^4*f*p^2*q^3 - 2*a*b^3*f*p*q^2 + a^2*b^
2*f*q)*x*log(c) - (6*b^4*f*p^3*q^4 - 6*a*b^3*f*p^2*q^3 + 3*a^2*b^2*f*p*q^2
- a^3*b*f*q)*x)*log(d))/f
```

Sympy [A] time = 26.4538, size = 2390, normalized size = 14.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4,x)
```

```
[Out] Piecewise((a**4*x + 4*a**3*b*e*p*q*log(e + f*x)/f + 4*a**3*b*p*q*x*log(e +
f*x) - 4*a**3*b*p*q*x + 4*a**3*b*q*x*log(d) + 4*a**3*b*x*log(c) + 6*a**2*b*
*2*e*p**2*q**2*log(e + f*x)**2/f - 12*a**2*b**2*e*p**2*q**2*log(e + f*x)/f
+ 12*a**2*b**2*e*p*q**2*log(d)*log(e + f*x)/f + 12*a**2*b**2*e*p*q*log(c)*l
og(e + f*x)/f + 6*a**2*b**2*p**2*q**2*x*log(e + f*x)**2 - 12*a**2*b**2*p**2
*q**2*x*log(e + f*x) + 12*a**2*b**2*p**2*q**2*x + 12*a**2*b**2*p*q**2*x*log
(d)*log(e + f*x) - 12*a**2*b**2*p*q**2*x*log(d) + 12*a**2*b**2*p*q*x*log(c)
*log(e + f*x) - 12*a**2*b**2*p*q*x*log(c) + 6*a**2*b**2*q**2*x*log(d)**2 +
12*a**2*b**2*q*x*log(c)*log(d) + 6*a**2*b**2*x*log(c)**2 + 4*a*b**3*e*p**3*
q**3*log(e + f*x)**3/f - 12*a*b**3*e*p**3*q**3*log(e + f*x)**2/f + 24*a*b**
3*e*p**3*q**3*log(e + f*x)/f + 12*a*b**3*e*p**2*q**3*log(d)*log(e + f*x)**2
/f - 24*a*b**3*e*p**2*q**3*log(d)*log(e + f*x)/f + 12*a*b**3*e*p**2*q**2*lo
g(c)*log(e + f*x)**2/f - 24*a*b**3*e*p**2*q**2*log(c)*log(e + f*x)/f + 12*a
*b**3*e*p*q**3*log(d)**2*log(e + f*x)/f + 24*a*b**3*e*p*q**2*log(c)*log(d)*
log(e + f*x)/f + 12*a*b**3*e*p*q*log(c)**2*log(e + f*x)/f + 4*a*b**3*p**3*q
**3*x*log(e + f*x)**3 - 12*a*b**3*p**3*q**3*x*log(e + f*x)**2 + 24*a*b**3*p
**3*q**3*x*log(e + f*x) - 24*a*b**3*p**3*q**3*x + 12*a*b**3*p**2*q**3*x*log
(d)*log(e + f*x)**2 - 24*a*b**3*p**2*q**3*x*log(d)*log(e + f*x) + 24*a*b**3
*p**2*q**3*x*log(d) + 12*a*b**3*p**2*q**2*x*log(c)*log(e + f*x)**2 - 24*a*b
**3*p**2*q**2*x*log(c)*log(e + f*x) + 24*a*b**3*p**2*q**2*x*log(c) + 12*a*b
**3*p*q**3*x*log(d)**2*log(e + f*x) - 12*a*b**3*p*q**3*x*log(d)**2 + 24*a*b
**3*p*q**2*x*log(c)*log(d)*log(e + f*x) - 24*a*b**3*p*q**2*x*log(c)*log(d)
+ 12*a*b**3*p*q*x*log(c)**2*log(e + f*x) - 12*a*b**3*p*q*x*log(c)**2 + 4*a*
b**3*q**3*x*log(d)**3 + 12*a*b**3*q**2*x*log(c)*log(d)**2 + 12*a*b**3*q*x*l
og(c)**2*log(d) + 4*a*b**3*x*log(c)**3 + b**4*e*p**4*q**4*log(e + f*x)**4/f
 - 4*b**4*e*p**4*q**4*log(e + f*x)**3/f + 12*b**4*e*p**4*q**4*log(e + f*x)*
*2/f - 24*b**4*e*p**4*q**4*log(e + f*x)/f + 4*b**4*e*p**3*q**4*log(d)*log(e
 + f*x)**3/f - 12*b**4*e*p**3*q**4*log(d)*log(e + f*x)**2/f + 24*b**4*e*p**
3*q**4*log(d)*log(e + f*x)/f + 4*b**4*e*p**3*q**3*log(c)*log(e + f*x)**3/f
- 12*b**4*e*p**3*q**3*log(c)*log(e + f*x)**2/f + 24*b**4*e*p**3*q**3*log(c)
*log(e + f*x)/f + 6*b**4*e*p**2*q**4*log(d)**2*log(e + f*x)**2/f - 12*b**4*
e*p**2*q**4*log(d)**2*log(e + f*x)/f + 12*b**4*e*p**2*q**3*log(c)*log(d)*lo
g(e + f*x)**2/f - 24*b**4*e*p**2*q**3*log(c)*log(d)*log(e + f*x)/f + 6*b**4
*e*p**2*q**2*log(c)**2*log(e + f*x)**2/f - 12*b**4*e*p**2*q**2*log(c)**2*lo
g(e + f*x)/f + 4*b**4*e*p*q**4*log(d)**3*log(e + f*x)/f + 12*b**4*e*p*q**3*
log(c)*log(d)**2*log(e + f*x)/f + 12*b**4*e*p*q**2*log(c)**2*log(d)*log(e +
 f*x)/f + 4*b**4*e*p*q*log(c)**3*log(e + f*x)/f + b**4*p**4*q**4*x*log(e +
f*x)**4 - 4*b**4*p**4*q**4*x*log(e + f*x)**3 + 12*b**4*p**4*q**4*x*log(e +
f*x)**2 - 24*b**4*p**4*q**4*x*log(e + f*x) + 24*b**4*p**4*q**4*x + 4*b**4*p
**3*q**4*x*log(d)*log(e + f*x)**3 - 12*b**4*p**3*q**4*x*log(d)*log(e + f*x)
**2 + 24*b**4*p**3*q**4*x*log(d)*log(e + f*x) - 24*b**4*p**3*q**4*x*log(d)
+ 4*b**4*p**3*q**3*x*log(c)*log(e + f*x)**3 - 12*b**4*p**3*q**3*x*log(c)*lo
g(e + f*x)**2 + 24*b**4*p**3*q**3*x*log(c)*log(e + f*x) - 24*b**4*p**3*q**3
*x*log(c) + 6*b**4*p**2*q**4*x*log(d)**2*log(e + f*x)**2 - 12*b**4*p**2*q**
4*x*log(d)**2*log(e + f*x) + 12*b**4*p**2*q**4*x*log(d)**2 + 12*b**4*p**2*q
**3*x*log(c)*log(d)*log(e + f*x)**2 - 24*b**4*p**2*q**3*x*log(c)*log(d)*log
(e + f*x) + 24*b**4*p**2*q**3*x*log(c)*log(d) + 6*b**4*p**2*q**2*x*log(c)**
2*log(e + f*x)**2 - 12*b**4*p**2*q**2*x*log(c)**2*log(e + f*x) + 12*b**4*p*
*2*q**2*x*log(c)**2 + 4*b**4*p*q**4*x*log(d)**3*log(e + f*x) - 4*b**4*p*q**
4*x*log(d)**3 + 12*b**4*p*q**3*x*log(c)*log(d)**2*log(e + f*x) - 12*b**4*p*
```

```
q**3*x*log(c)*log(d)**2 + 12*b**4*p*q**2*x*log(c)**2*log(d)*log(e + f*x) -
12*b**4*p*q**2*x*log(c)**2*log(d) + 4*b**4*p*q*x*log(c)**3*log(e + f*x) - 4
*b**4*p*q*x*log(c)**3 + b**4*q**4*x*log(d)**4 + 4*b**4*q**3*x*log(c)*log(d)
**3 + 6*b**4*q**2*x*log(c)**2*log(d)**2 + 4*b**4*q*x*log(c)**3*log(d) + b**
4*x*log(c)**4, Ne(f, 0)), (x*(a + b*log(c*(d*e**p)**q))**4, True))
```

Giac [B] time = 1.34675, size = 2433, normalized size = 15.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4,x, algorithm="giac")
```

```
[Out] (f*x + e)*b^4*p^4*q^4*log(f*x + e)^4/f - 4*(f*x + e)*b^4*p^4*q^4*log(f*x +
e)^3/f + 4*(f*x + e)*b^4*p^3*q^4*log(f*x + e)^3*log(d)/f + 12*(f*x + e)*b^4
*p^4*q^4*log(f*x + e)^2/f + 4*(f*x + e)*b^4*p^3*q^3*log(f*x + e)^3*log(c)/f
 - 12*(f*x + e)*b^4*p^3*q^4*log(f*x + e)^2*log(d)/f + 6*(f*x + e)*b^4*p^2*q
^4*log(f*x + e)^2*log(d)^2/f - 24*(f*x + e)*b^4*p^4*q^4*log(f*x + e)/f + 4*
(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)^3/f - 12*(f*x + e)*b^4*p^3*q^3*log(f*x
 + e)^2*log(c)/f + 24*(f*x + e)*b^4*p^3*q^4*log(f*x + e)*log(d)/f + 12*(f*x
 + e)*b^4*p^2*q^3*log(f*x + e)^2*log(c)*log(d)/f - 12*(f*x + e)*b^4*p^2*q^4
*log(f*x + e)*log(d)^2/f + 4*(f*x + e)*b^4*p*q^4*log(f*x + e)*log(d)^3/f +
24*(f*x + e)*b^4*p^4*q^4/f - 12*(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)^2/f +
24*(f*x + e)*b^4*p^3*q^3*log(f*x + e)*log(c)/f + 6*(f*x + e)*b^4*p^2*q^2*lo
g(f*x + e)^2*log(c)^2/f - 24*(f*x + e)*b^4*p^3*q^4*log(d)/f + 12*(f*x + e)*
a*b^3*p^2*q^3*log(f*x + e)^2*log(d)/f - 24*(f*x + e)*b^4*p^2*q^3*log(f*x +
e)*log(c)*log(d)/f + 12*(f*x + e)*b^4*p^2*q^4*log(d)^2/f + 12*(f*x + e)*b^4
*p*q^3*log(f*x + e)*log(c)*log(d)^2/f - 4*(f*x + e)*b^4*p*q^4*log(d)^3/f +
(f*x + e)*b^4*q^4*log(d)^4/f + 24*(f*x + e)*a*b^3*p^3*q^3*log(f*x + e)/f -
24*(f*x + e)*b^4*p^3*q^3*log(c)/f + 12*(f*x + e)*a*b^3*p^2*q^2*log(f*x + e)
^2*log(c)/f - 12*(f*x + e)*b^4*p^2*q^2*log(f*x + e)*log(c)^2/f - 24*(f*x +
e)*a*b^3*p^2*q^3*log(f*x + e)*log(d)/f + 24*(f*x + e)*b^4*p^2*q^3*log(c)*lo
g(d)/f + 12*(f*x + e)*b^4*p*q^2*log(f*x + e)*log(c)^2*log(d)/f + 12*(f*x +
e)*a*b^3*p*q^3*log(f*x + e)*log(d)^2/f - 12*(f*x + e)*b^4*p*q^3*log(c)*log(
d)^2/f + 4*(f*x + e)*b^4*q^3*log(c)*log(d)^3/f - 24*(f*x + e)*a*b^3*p^3*q^3
/f + 6*(f*x + e)*a^2*b^2*p^2*q^2*log(f*x + e)^2/f - 24*(f*x + e)*a*b^3*p^2*
q^2*log(f*x + e)*log(c)/f + 12*(f*x + e)*b^4*p^2*q^2*log(c)^2/f + 4*(f*x +
e)*b^4*p*q*log(f*x + e)*log(c)^3/f + 24*(f*x + e)*a*b^3*p^2*q^3*log(d)/f +
24*(f*x + e)*a*b^3*p*q^2*log(f*x + e)*log(c)*log(d)/f - 12*(f*x + e)*b^4*p*
q^2*log(c)^2*log(d)/f - 12*(f*x + e)*a*b^3*p*q^3*log(d)^2/f + 6*(f*x + e)*b
^4*q^2*log(c)^2*log(d)^2/f + 4*(f*x + e)*a*b^3*q^3*log(d)^3/f - 12*(f*x + e
)*a^2*b^2*p^2*q^2*log(f*x + e)/f + 24*(f*x + e)*a*b^3*p^2*q^2*log(c)/f + 12
*(f*x + e)*a*b^3*p*q*log(f*x + e)*log(c)^2/f - 4*(f*x + e)*b^4*p*q*log(c)^3
/f + 12*(f*x + e)*a^2*b^2*p*q^2*log(f*x + e)*log(d)/f - 24*(f*x + e)*a*b^3*
p*q^2*log(c)*log(d)/f + 4*(f*x + e)*b^4*q*log(c)^3*log(d)/f + 12*(f*x + e)*
a*b^3*q^2*log(c)*log(d)^2/f + 12*(f*x + e)*a^2*b^2*p^2*q^2/f + 12*(f*x + e)
*a^2*b^2*p*q*log(f*x + e)*log(c)/f - 12*(f*x + e)*a*b^3*p*q*log(c)^2/f + (f
*x + e)*b^4*log(c)^4/f - 12*(f*x + e)*a^2*b^2*p*q^2*log(d)/f + 12*(f*x + e)
*a*b^3*q*log(c)^2*log(d)/f + 6*(f*x + e)*a^2*b^2*q^2*log(d)^2/f + 4*(f*x +
e)*a^3*b*p*q*log(f*x + e)/f - 12*(f*x + e)*a^2*b^2*p*q*log(c)/f + 4*(f*x +
e)*a*b^3*log(c)^3/f + 12*(f*x + e)*a^2*b^2*q*log(c)*log(d)/f - 4*(f*x + e)*
a^3*b*p*q/f + 6*(f*x + e)*a^2*b^2*log(c)^2/f + 4*(f*x + e)*a^3*b*q*log(d)/f
 + 4*(f*x + e)*a^3*b*log(c)/f + (f*x + e)*a^4/f
```

3.442 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{g+hx}\,dx$

Optimal. Leaf size=231

$$\frac{24b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{12b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^4*Log[(f*(g + h*x))/(f*g - e*h)])/h + (4*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, -
((h*(e + f*x))/(f*g - e*h))])/h + (24*b^3*p^3*q^3*(a + b*Log[c*(d*(e + f*x)
^p)^q])*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h - (24*b^4*p^4*q^4*PolyL
og[5, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rubi [A] time = 0.534294, antiderivative size = 231, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2396, 2433, 2374, 2383, 6589, 2445}

$$\frac{24b^3p^3q^3\text{PolyLog}\left(4,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{12b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x),x]
```


```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^4*Log[(f*(g + h*x))/(f*g - e*h)])/h + (4*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, -
((h*(e + f*x))/(f*g - e*h))])/h + (24*b^3*p^3*q^3*(a + b*Log[c*(d*(e + f*x)
^p)^q])*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h - (24*b^4*p^4*q^4*PolyL
og[5, -((h*(e + f*x))/(f*g - e*h))])/h
```


Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
```

```
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{g+hx}dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^4}{g+hx}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{e+fx}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{(a+b\log(cd^qx^{p}}{}\right.}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\text{L}}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\text{L}}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\text{L}}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{4bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\text{L}}{h}$$

Mathematica [B] time = 0.42591, size = 1095, normalized size = 4.74

$$\frac{\log(g+hx)a^4 - 4bpq\log(e+fx)\log(g+hx)a^3 + 4b\log\left(c\left(d(e+fx)^p\right)^q\right)\log(g+hx)a^3 + 4bpq\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x),x]
```

```
[Out] (a^4*Log[g + h*x] - 4*a^3*b*p*q*Log[e + f*x]*Log[g + h*x] + 6*a^2*b^2*p^2*q
^2*Log[e + f*x]^2*Log[g + h*x] - 4*a*b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x
] + b^4*p^4*q^4*Log[e + f*x]^4*Log[g + h*x] + 4*a^3*b*Log[c*(d*(e + f*x)^p)
^q]*Log[g + h*x] - 12*a^2*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log
[g + h*x] + 12*a*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g
+ h*x] - 4*b^4*p^3*q^3*Log[e + f*x]^3*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x]
 + 6*a^2*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 12*a*b^3*p*q*Log[e +
 f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 6*b^4*p^2*q^2*Log[e + f*x]^
```

```
2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 4*a*b^3*Log[c*(d*(e + f*x)^p)^q
]^3*Log[g + h*x] - 4*b^4*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^3*Log[g
+ h*x] + b^4*Log[c*(d*(e + f*x)^p)^q]^4*Log[g + h*x] + 4*a^3*b*p*q*Log[e +
f*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 6*a^2*b^2*p^2*q^2*Log[e + f*x]^2*Log[
(f*(g + h*x))/(f*g - e*h)] + 4*a*b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x
))/(f*g - e*h)] - b^4*p^4*q^4*Log[e + f*x]^4*Log[(f*(g + h*x))/(f*g - e*h)]
 + 12*a^2*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(
f*g - e*h)] - 12*a*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] + 4*b^4*p^3*q^3*Log[e + f*x]^3*Log[c*(d*(e + f*x
)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] - 6*b^4*p^2*q^2*Log[e + f
*x]^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*p*q
*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 4
*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*PolyLog[2, (h*(e + f*x))/(-(f*g)
+ e*h)] - 12*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[3, (h*(
e + f*x))/(-(f*g) + e*h)] + 24*a*b^3*p^3*q^3*PolyLog[4, (h*(e + f*x))/(-(f*
g) + e*h)] + 24*b^4*p^3*q^3*Log[c*(d*(e + f*x)^p)^q]*PolyLog[4, (h*(e + f*x
))/(-(f*g) + e*h)] - 24*b^4*p^4*q^4*PolyLog[5, (h*(e + f*x))/(-(f*g) + e*h)
])/h
```

Maple [F] time = 0.719, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{4}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^4\log\left(hx+g\right)}{h}+\int\frac{b^4\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^4+6\left(\log\left(c\right)^2+2\,\log\left(c\right)\log\left(d^q\right)+\log\left(d^q\right)^2\right)a^2b^2+4\left(\log\left(c\right)^3+3\,\log\left(c\right)^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^4*log(h*x + g)/h + integrate((b^4*log(((f*x + e)^p)^q)^4 + 6*(log(c)^2 +
2*log(c)*log(d^q) + log(d^q)^2)*a^2*b^2 + 4*(log(c)^3 + 3*log(c)^2*log(d^q)
 + 3*log(c)*log(d^q)^2 + log(d^q)^3)*a*b^3 + (log(c)^4 + 4*log(c)^3*log(d^q
) + 6*log(c)^2*log(d^q)^2 + 4*log(c)*log(d^q)^3 + log(d^q)^4)*b^4 + 4*a^3*b
*(log(c) + log(d^q)) + 4*(b^4*(log(c) + log(d^q)) + a*b^3)*log(((f*x + e)^p
)^q)^3 + 6*((log(c)^2 + 2*log(c)*log(d^q) + log(d^q)^2)*b^4 + 2*a*b^3*(log(
c) + log(d^q)) + a^2*b^2)*log(((f*x + e)^p)^q)^2 + 4*(3*(log(c)^2 + 2*log(c
)*log(d^q) + log(d^q)^2)*a*b^3 + (log(c)^3 + 3*log(c)^2*log(d^q) + 3*log(c)
*log(d^q)^2 + log(d^q)^3)*b^4 + 3*a^2*b^2*(log(c) + log(d^q)) + a^3*b)*log(
((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^4 + 4\,ab^3 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 6\,a^2b^2 \log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 4\,a^3b \log\left(\left(\left(fx+e\right)^p d\right.\right.}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^4*log(((f*x + e)^p*d)^q*c)^4 + 4*a*b^3*log(((f*x + e)^p*d)^q*c)
^3 + 6*a^2*b^2*log(((f*x + e)^p*d)^q*c)^2 + 4*a^3*b*log(((f*x + e)^p*d)^q*c
) + a^4)/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b \log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a\right)^4}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^4/(h*x + g), x)
```

3.443 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(g+hx)^2}\,dx$

Optimal. Leaf size=274

$$\frac{24b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}-\frac{12b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h(fg-eh)}$$

```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/((f*g - e*h)*(g + h*x)) - (4
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (12*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Pol
yLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (24*b^3*f*p^3*q^3*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
(h*(f*g - e*h)) - (24*b^4*f*p^4*q^4*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))
])/(h*(f*g - e*h))
```

Rubi [A] time = 0.52508, antiderivative size = 274, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2397, 2396, 2433, 2374, 2383, 6589, 2445}

$$\frac{24b^3fp^3q^3\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(fg-eh)}-\frac{12b^2fp^2q^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x)^2,x]
```


```
[Out] ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^4)/((f*g - e*h)*(g + h*x)) - (4
*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])
/(h*(f*g - e*h)) - (12*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Pol
yLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*(f*g - e*h)) + (24*b^3*f*p^3*q^3*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
(h*(f*g - e*h)) - (24*b^4*f*p^4*q^4*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))
])/(h*(f*g - e*h))
```


Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(g+hx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^4}{(g+hx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \text{Subst}\left(\frac{(4bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}}{fg-eh}\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 \text{lo}}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 \text{lo}}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 \text{lo}}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 \text{lo}}{h(fg-eh)}$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^4}{(fg-eh)(g+hx)} - \frac{4bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 \text{lo}}{h(fg-eh)}$$

Mathematica [B] time = 0.57738, size = 1301, normalized size = 4.75

$$\frac{fga^4 - eha^4 - 4bfgpq\log(e+fx)a^3 - 4bfhpqx\log(e+fx)a^3 + 4bfg\log\left(c\left(d(e+fx)^p\right)^q\right)a^3 - 4beh\log\left(c\left(d(e+fx)^{p}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^4/(g + h*x)^2,x]
```

```
[Out] (a^4*f*g - a^4*e*h - 4*a^3*b*f*g*p*q*Log[e + f*x] - 4*a^3*b*f*h*p*q*x*Log[e
 + f*x] + 6*a^2*b^2*f*g*p^2*q^2*Log[e + f*x]^2 + 6*a^2*b^2*f*h*p^2*q^2*x*Lo
g[e + f*x]^2 - 4*a*b^3*f*g*p^3*q^3*Log[e + f*x]^3 - 4*a*b^3*f*h*p^3*q^3*x*L
og[e + f*x]^3 + b^4*f*g*p^4*q^4*Log[e + f*x]^4 + b^4*f*h*p^4*q^4*x*Log[e +
f*x]^4 + 4*a^3*b*f*g*Log[c*(d*(e + f*x)^p)^q] - 4*a^3*b*e*h*Log[c*(d*(e + f
*x)^p)^q] - 12*a^2*b^2*f*g*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 12*a
^2*b^2*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] + 12*a*b^3*f*g*p^2*q
^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q] + 12*a*b^3*f*h*p^2*q^2*x*Log[e +
 f*x]^2*Log[c*(d*(e + f*x)^p)^q] - 4*b^4*f*g*p^3*q^3*Log[e + f*x]^3*Log[c*(
```

```
d*(e + f*x)^p)^q] - 4*b^4*f*h*p^3*q^3*x*Log[e + f*x]^3*Log[c*(d*(e + f*x)^p
)^q] + 6*a^2*b^2*f*g*Log[c*(d*(e + f*x)^p)^q]^2 - 6*a^2*b^2*e*h*Log[c*(d*(e
 + f*x)^p)^q]^2 - 12*a*b^3*f*g*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2
- 12*a*b^3*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 + 6*b^4*f*g*p^
2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]^2 + 6*b^4*f*h*p^2*q^2*x*Log[e
 + f*x]^2*Log[c*(d*(e + f*x)^p)^q]^2 + 4*a*b^3*f*g*Log[c*(d*(e + f*x)^p)^q]
^3 - 4*a*b^3*e*h*Log[c*(d*(e + f*x)^p)^q]^3 - 4*b^4*f*g*p*q*Log[e + f*x]*Lo
g[c*(d*(e + f*x)^p)^q]^3 - 4*b^4*f*h*p*q*x*Log[e + f*x]*Log[c*(d*(e + f*x)^
p)^q]^3 + b^4*f*g*Log[c*(d*(e + f*x)^p)^q]^4 - b^4*e*h*Log[c*(d*(e + f*x)^p
)^q]^4 + 4*a^3*b*f*g*p*q*Log[(f*(g + h*x))/(f*g - e*h)] + 4*a^3*b*f*h*p*q*x
*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a^2*b^2*f*g*p*q*Log[c*(d*(e + f*x)^p)^
q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a^2*b^2*f*h*p*q*x*Log[c*(d*(e + f*x)
^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*f*g*p*q*Log[c*(d*(e + f*x)
^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 12*a*b^3*f*h*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*f*g*p*q*Log[c*(d*(e + f
*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 4*b^4*f*h*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 12*b^2*f*p^2*q^2*(g + h*x)*(a
 + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 24*b^3*f*p^3*q^3*(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, (h*
(e + f*x))/(-(f*g) + e*h)] + 24*b^4*f*g*p^4*q^4*PolyLog[4, (h*(e + f*x))/(-
(f*g) + e*h)] + 24*b^4*f*h*p^4*q^4*x*PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h
)])/(h*(-(f*g) + e*h)*(g + h*x))
```

Maple [F] time = 0.686, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{4}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="maxima")
```

```
[Out] 4*a^3*b*f*p*q*(log(f*x + e)/(f*g*h - e*h^2) - log(h*x + g)/(f*g*h - e*h^2))
 - b^4*log(((f*x + e)^p)^q)^4/(h^2*x + g*h) - 4*a^3*b*log(((f*x + e)^p*d)^q
*c)/(h^2*x + g*h) - a^4/(h^2*x + g*h) + integrate((6*(e*h*log(c)^2 + 2*e*h*
log(c)*log(d^q) + e*h*log(d^q)^2)*a^2*b^2 + 4*(e*h*log(c)^3 + 3*e*h*log(c)^
2*log(d^q) + 3*e*h*log(c)*log(d^q)^2 + e*h*log(d^q)^3)*a*b^3 + (e*h*log(c)^
4 + 4*e*h*log(c)^3*log(d^q) + 6*e*h*log(c)^2*log(d^q)^2 + 4*e*h*log(c)*log(
d^q)^3 + e*h*log(d^q)^4)*b^4 + 4*(a*b^3*e*h + (f*g*p*q + e*h*log(c) + e*h*l
og(d^q))*b^4 + (a*b^3*f*h + (f*h*p*q + f*h*log(c) + f*h*log(d^q))*b^4)*x)*l
og(((f*x + e)^p)^q)^3 + 6*(a^2*b^2*e*h + 2*(e*h*log(c) + e*h*log(d^q))*a*b^
3 + (e*h*log(c)^2 + 2*e*h*log(c)*log(d^q) + e*h*log(d^q)^2)*b^4 + (a^2*b^2*
f*h + 2*(f*h*log(c) + f*h*log(d^q))*a*b^3 + (f*h*log(c)^2 + 2*f*h*log(c)*lo
```

```
g(d^q) + f*h*log(d^q)^2)*b^4)*x)*log(((f*x + e)^p)^q)^2 + (6*(f*h*log(c)^2
+ 2*f*h*log(c)*log(d^q) + f*h*log(d^q)^2)*a^2*b^2 + 4*(f*h*log(c)^3 + 3*f*h
*log(c)^2*log(d^q) + 3*f*h*log(c)*log(d^q)^2 + f*h*log(d^q)^3)*a*b^3 + (f*h
*log(c)^4 + 4*f*h*log(c)^3*log(d^q) + 6*f*h*log(c)^2*log(d^q)^2 + 4*f*h*log
(c)*log(d^q)^3 + f*h*log(d^q)^4)*b^4)*x + 4*(3*(e*h*log(c) + e*h*log(d^q))*
a^2*b^2 + 3*(e*h*log(c)^2 + 2*e*h*log(c)*log(d^q) + e*h*log(d^q)^2)*a*b^3 +
 (e*h*log(c)^3 + 3*e*h*log(c)^2*log(d^q) + 3*e*h*log(c)*log(d^q)^2 + e*h*lo
g(d^q)^3)*b^4 + (3*(f*h*log(c) + f*h*log(d^q))*a^2*b^2 + 3*(f*h*log(c)^2 +
2*f*h*log(c)*log(d^q) + f*h*log(d^q)^2)*a*b^3 + (f*h*log(c)^3 + 3*f*h*log(c
)^2*log(d^q) + 3*f*h*log(c)*log(d^q)^2 + f*h*log(d^q)^3)*b^4)*x)*log(((f*x
+ e)^p)^q))/(f*h^3*x^3 + e*g^2*h + (2*f*g*h^2 + e*h^3)*x^2 + (f*g^2*h + 2*e
*g*h^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^4\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^4 + 4\,ab^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 6\,a^2b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 4\,a^3b\log\left(\left(\left(fx+\right.\right.\right.}{h^2x^2+2\,ghx+g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="fricas")
```

```
[Out] integral((b^4*log(((f*x + e)^p*d)^q*c)^4 + 4*a*b^3*log(((f*x + e)^p*d)^q*c)
^3 + 6*a^2*b^2*log(((f*x + e)^p*d)^q*c)^2 + 4*a^3*b*log(((f*x + e)^p*d)^q*c
) + a^4)/(h^2*x^2 + 2*g*h*x + g^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**4/(h*x+g)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^4}{\left(hx+g\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^4/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^4/(h*x + g)^2, x)
```

3.444 $\int \log\left(c\left(d(e+fx)^p\right)^q\right)\,dx$

Optimal. Leaf size=29

$$\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-pqx$$

```
[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rubi [A] time = 0.0230847, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2389, 2295, 2445}

$$\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-pqx$$

Antiderivative was successfully verified.

```
[In] Int[Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}\int \log\left(c\left(d(e+fx)^p\right)^q\right)\,dx &= \text{Subst}\left(\int \log\left(cd^q(e+fx)^{pq}\right)\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)\\ &= \text{Subst}\left(\frac{\text{Subst}\left(\int \log\left(cd^qx^{pq}\right)\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)\\ &= -pqx+\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}\end{aligned}$$

Mathematica [A] time = 0.0097612, size = 29, normalized size = 1.

$$\frac{(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-pqx$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[c*(d*(e + f*x)^p)^q],x]
```

```
[Out] -(p*q*x) + ((e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f
```

Maple [A] time = 0.066, size = 36, normalized size = 1.2

$$\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)x-pqx+\frac{pqe\ln\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(c*(d*(f*x+e)^p)^q),x)
```

```
[Out] ln(c*(d*(f*x+e)^p)^q)*x-p*q*x+q*p/f*e*ln(f*x+e)
```

Maxima [A] time = 1.12423, size = 54, normalized size = 1.86

$$-fpq\left(\frac{x}{f}-\frac{e\log\left(fx+e\right)}{f^2}\right)+x\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="maxima")
```

```
[Out] -f*p*q*(x/f - e*log(f*x + e)/f^2) + x*log(((f*x + e)^p*d)^q*c)
```

Fricas [A] time = 1.95057, size = 101, normalized size = 3.48

$$-\frac{fpqx-fqx\log\left(d\right)-fx\log\left(c\right)-\left(fpqx+epq\right)\log\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="fricas")
```

```
[Out] -(f*p*q*x - f*q*x*log(d) - f*x*log(c) - (f*p*q*x + e*p*q)*log(f*x + e))/f
```

Sympy [A] time = 0.917149, size = 53, normalized size = 1.83

$$\begin{cases}\frac{epq\log\left(e+fx\right)}{f}+pqx\log\left(e+fx\right)-pqx+qx\log\left(d\right)+x\log\left(c\right) & \text{for}\ f\neq 0\\ x\log\left(c\left(de^p\right)^q\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(c*(d*(f*x+e)**p)**q),x)
```

```
[Out] Piecewise((e*p*q*log(e + f*x)/f + p*q*x*log(e + f*x) - p*q*x + q*x*log(d) +
 x*log(c), Ne(f, 0)), (x*log(c*(d*e**p)**q), True))
```

Giac [A] time = 1.26604, size = 78, normalized size = 2.69

$$\frac{(fx+e)pq\log(fx+e)}{f} - \frac{(fx+e)pq}{f} + \frac{(fx+e)q\log(d)}{f} + \frac{(fx+e)\log(c)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(c*(d*(f*x+e)^p)^q),x, algorithm="giac")
```

```
[Out] (f*x + e)*p*q*log(f*x + e)/f - (f*x + e)*p*q/f + (f*x + e)*q*log(d)/f + (f*
x + e)*log(c)/f
```

3.445 $\int \frac{(g+hx)^2}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=279

$$\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{bf^3pq}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{p\cdots}}}{bf^3pq}$$

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b*E^(a/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*(f*
g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*
p*q)])/(b*E^((2*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (h^2
*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b*E^((3*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rubi [A] time = 0.778938, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{bf^3pq}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{p\cdots}}}{bf^3pq}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b*E^(a/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*(f*
g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*
p*q)])/(b*E^((2*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (h^2
*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b*E^((3*a)/(b*p*q))*f^3*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}+\frac{2h(fg-eh)(e+fx)}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}+\frac{}{f^2\left(a+\right.}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{(e+fx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)+\text{Subst}\left(\frac{(2h(fg-e}{}\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int\frac{x^2}{a+b\log(cd^qx^{pq})}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)+\text{Sub}$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int\frac{e^{\frac{3x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+fx)^{pq}\right)\right)}{f^3pq}, cd^q\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^3pq}+\frac{2e^{-\frac{2a}{bpq}}h(fg-eh}{}$$

Mathematica [A] time = 0.815474, size = 252, normalized size = 0.9

$$\frac{(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(e^{\frac{2a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{2}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)-h(e+fx)\left(-2e^{\frac{a}{bpq}}(fg-eh)\right.\right.}{bf^3pq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((e + f*x)*(E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))
*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] - h*(e + f*x)*(-2*
E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*
(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)] - h*(e + f*x)*ExpIntegralEi[(3*(
a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])))/(b*E^((3*a)/(b*p*q))*f^3*p*q*(
c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Maple [F] time = 0.5, size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 2.03072, size = 597, normalized size = 2.14

$$\frac{\left(h^2\,\mathrm{log\_integral}\left(\left(f^3x^3+3\,ef^2x^2+3\,e^2fx+e^3\right)e^{\left(\frac{3\left(bq\log(d)+b\log(c)+a\right)}{bpq}\right)}\right)+2\left(fgh-eh^2\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\,\mathrm{log\_integral}\left(\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] (h^2*log_integral((f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x + e^3)*e^(3*(b*q*log(d
) + b*log(c) + a)/(b*p*q))) + 2*(f*g*h - e*h^2)*e^((b*q*log(d) + b*log(c) +
 a)/(b*p*q))*log_integral((f^2*x^2 + 2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*lo
g(c) + a)/(b*p*q))) + (f^2*g^2 - 2*e*f*g*h + e^2*h^2)*e^(2*(b*q*log(d) + b*
log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/
```

```
(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b*f^3*p*q)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(g+hx)^2}{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A] time = 1.39634, size = 707, normalized size = 2.53

$$\frac{g^2\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}-\frac{2gh\mathrm{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}+1\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}f^2pq}+\frac{2gh\mathrm{Ei}\left(\frac{2\log(d}{p}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(
b*c^(1/(p*q))*d^(1/p)*f*p*q) - 2*g*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
 + log(f*x + e))*e^(-a/(b*p*q) + 1)/(b*c^(1/(p*q))*d^(1/p)*f^2*p*q) + 2*g*h
*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*
p*q))/(b*c^(2/(p*q))*d^(2/p)*f^2*p*q) + h^2*Ei(log(d)/p + log(c)/(p*q) + a/
(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)/(b*c^(1/(p*q))*d^(1/p)*f^3*p*q)
- 2*h^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-
2*a/(b*p*q) + 1)/(b*c^(2/(p*q))*d^(2/p)*f^3*p*q) + h^2*Ei(3*log(d)/p + 3*lo
g(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))/(b*c^(3/(p*q))*
d^(3/p)*f^3*p*q)
```

3.446 $\int \frac{g+hx}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=179

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^2pq}+\frac{h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{bf^2pq}$$

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b*E^(a/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(e + f*
x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(b*E^((2*
a)/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rubi [A] time = 0.416135, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^2pq}+\frac{h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{bf^2pq}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b*E^(a/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(e + f*
x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(b*E^((2*
a)/(b*p*q))*f^2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \frac{g+hx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{fg-eh}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}+\frac{h(e+fx)}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}\right)dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{e+fx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)+\text{Subst}\left(\frac{(fg-eh)\int\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int \frac{x}{a+b\log(cd^qx^{pq})}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)+\text{Subs}$$

$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{pq}}}{a+bx}\,dx, x, \log\left(cd^q(e+fx)^{pq}\right)\right)}{f^2pq}, cd^q(\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bf^2pq}+\frac{e^{-\frac{2a}{bpq}}h(e+fx)^2\left(\right.}{}$$

Mathematica [A] time = 0.260749, size = 164, normalized size = 0.92

$$\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)+h(e+fx)\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{bpq}\right.\right.}{bf^2pq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((e + f*x)*(E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIn
tegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] + h*(e + f*x)*ExpIntegra
lEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]))/(b*E^((2*a)/(b*p*q))*f^
2*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Maple [F] time = 0.266, size = 0, normalized size = 0.

$$\int \frac{hx+g}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 1.96442, size = 351, normalized size = 1.96

$$\frac{\left(\left(fg-eh\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)+h\operatorname{log\_integral}\left(\left(f^{2}x^{2}+2efx+e^{2}\right)e^{\left(\frac{2\left(bq\log(d)+\cdots\right.}{bp\cdots}\right.}\right.\cdots}{bf^{2}pq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] ((f*g - e*h)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)
*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) + h*log_integral((f^2*x^2 + 2*e*f
*x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-2*(b*q*log(d) + b
*log(c) + a)/(b*p*q))/(b*f^2*p*q)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{g+hx}{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A] time = 1.25138, size = 340, normalized size = 1.9

$$\frac{g\text{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}-\frac{h\text{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}+1\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}f^2pq}+\frac{h\text{Ei}\left(\frac{2\log(d)}{p}+\frac{2\log}{p}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] g*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(b*
c^(1/(p*q))*d^(1/p)*f*p*q) - h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log
(f*x + e))*e^(-a/(b*p*q) + 1)/(b*c^(1/(p*q))*d^(1/p)*f^2*p*q) + h*Ei(2*log(
d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))/(b*c
^(2/(p*q))*d^(2/p)*f^2*p*q)
```

3.447 $\int \frac{1}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=83

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\,\mathrm{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

Rubi [A] time = 0.119018, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\,\mathrm{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}dx = \text{Subst}\left(\int \frac{1}{a+b\log\left(cd^q(e+fx)^{pq}\right)}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^q x^{pq})}dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{pq}}}{a+bx}dx, x, \log\left(cd^q(e+fx)^{pq}\right)\right)}{fpq}, cd^q(e\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

Mathematica [A] time = 0.0619316, size = 83, normalized size = 1.

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{bfpq}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-1),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b*E^(a
/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))
```

Maple [F] time = 0.271, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 1.94225, size = 157, normalized size = 1.89

$$\frac{e^{\left(-\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\right)}{bfpq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log
(d) + b*log(c) + a)/(b*p*q)))/(b*f*p*q)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral(1/(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [A] time = 1.30398, size = 107, normalized size = 1.29

$$\frac{\operatorname{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx+e\right)\right)e^{\left(-\frac{a}{bpq}\right)}}{bc^{\frac{1}{pq}}d^{\left(\frac{1}{p}\right)}fpq}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/(b*c^
(1/(p*q))*d^(1/p)*f*p*q)
```

3.448 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.0699271, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.258653, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.679, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)

[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")

[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ahx+ag+(bhx+bg)\log\left(\left((fx+e)^p d\right)^q c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")

[Out] integral(1/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)(g+hx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)

[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.449 $\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.0657543, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.790684, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.675, size = 0, normalized size = 0.

$$\int \frac{1}{\left(hx+g\right)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ah^2x^2+2\,aghx+ag^2+\left(bh^2x^2+2\,bghx+bg^2\right)\log\left(\left((fx+e)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*h^2*x^2 + 2*a*g*h*x + a*g^2 + (b*h^2*x^2 + 2*b*g*h*x + b*g^2)
*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.450 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=326

$$\frac{4h(e+fx)^2 e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^2f^3p^2q^2}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{p}}}{b^2f^3p^2q^2}$$

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b^2*E^(a/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4
*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((2*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) + (3*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p
*q))) - ((e + f*x)*(g + h*x)^2)/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rubi [A] time = 1.29182, antiderivative size = 326, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{4h(e+fx)^2 e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^2f^3p^2q^2}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{p}}}{b^2f^3p^2q^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(b^2*E^(a/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4
*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((2*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) + (3*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]
))/(b*p*q)])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p
*q))) - ((e + f*x)*(g + h*x)^2)/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{3\int \frac{(g+hx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{bpq}, cd^q(e+\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{3\int \left(\frac{(fg-eh)^2}{f^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)} + \frac{2}{f^2(a+}\right.}{}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left(3h^2\right)\int \frac{(e+fx)^2}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{bf^2pq}, cd^q\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left(3h^2\right)\text{Subst}\left(\int \frac{x^2}{a+b\log(cd^qx^{pq})}\,dx,\right.}{bf^3pq}\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left(3h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right.}{}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^3p^2q^2} + \frac{4e^{-\frac{2a}{bpq}}h(}{}$$

Mathematica [B] time = 0.939192, size = 1310, normalized size = 4.02

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (-(b*e*E^((3*a)/(b*p*q))*f^2*g^2*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - b*E
^((3*a)/(b*p*q))*f^3*g^2*p*q*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - 2*b*e*E^((
3*a)/(b*p*q))*f^2*g*h*p*q*x*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - 2*b*E^((3*a)/
(b*p*q))*f^3*g*h*p*q*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - b*e*E^((3*a)/(b*
p*q))*f^2*h^2*p*q*x^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) - b*E^((3*a)/(b*p*q))
*f^3*h^2*p*q*x^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q)) + a*E^((2*a)/(b*p*q))*f^2*
g^2*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d
*(e + f*x)^p)^q])/(b*p*q)] - 2*a*e*E^((2*a)/(b*p*q))*f*g*h*(e + f*x)*(c*(d*
(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q)] + a*e^2*E^((2*a)/(b*p*q))*h^2*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)] + 4*a*E^(a/(b*p
*q))*f*g*h*(e + f*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a
+ b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)] - 4*a*e*E^(a/(b*p*q))*h^2*(e + f*x)
^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)] + 3*a*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*
(e + f*x)^p)^q]))/(b*p*q)] + b*E^((2*a)/(b*p*q))*f^2*g^2*(e + f*x)*(c*(d*(e
 + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p
*q)]*Log[c*(d*(e + f*x)^p)^q] - 2*b*e*E^((2*a)/(b*p*q))*f*g*h*(e + f*x)*(c*
```

```
(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])
/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + b*e^2*E^((2*a)/(b*p*q))*h^2*(e + f*x)*
(c*(d*(e + f*x)^p)^q)^(2/(p*q))*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^
q])/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + 4*b*E^(a/(b*p*q))*f*g*h*(e + f*x)^2
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)
^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] - 4*b*e*E^(a/(b*p*q))*h^2*(e + f
*x)^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e +
 f*x)^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p)^q] + 3*b*h^2*(e + f*x)^3*ExpIn
tegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*Log[c*(d*(e + f*x)^p
)^q])/(b^2*E^((3*a)/(b*p*q))*f^3*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(a
 + b*Log[c*(d*(e + f*x)^p)^q]))
```

Maple [F] time = 0.49, size = 0, normalized size = 0.

$$\int \frac{\left(hx+g\right)^{2}}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{fh^2x^3+eg^2+\left(2\,fgh+eh^2\right)x^2+\left(fg^2+2\,egh\right)x}{b^2fpq\log\left(\left(\left(fx+e\right)^p\right)^q\right)+abfpq+\left(fpq\log\left(c\right)+fpq\log\left(d^q\right)\right)b^2}+\int\frac{3\,fh^2x^2+fg^2+2\,egh+2\left(2\,fgh+\right.}{b^2fpq\log\left(\left(\left(fx+e\right)^p\right)^q\right)+abfpq+\left(fpq\log\left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*h^2*x^3 + e*g^2 + (2*f*g*h + e*h^2)*x^2 + (f*g^2 + 2*e*g*h)*x)/(b^2*f*p
*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q*log(c) + f*p*q*log(d^q))*b^2)
+ integrate((3*f*h^2*x^2 + f*g^2 + 2*e*g*h + 2*(2*f*g*h + e*h^2)*x)/(b^2*f*
p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q*log(c) + f*p*q*log(d^q))*b^2)
, x)
```

Fricas [A] time = 2.02772, size = 1366, normalized size = 4.19

$$\frac{\left(4\left(afgh-aeh^2+\left(bfgh-beh^2\right)pq\log\left(fx+e\right)+\left(bfgh-beh^2\right)q\log\left(d\right)+\left(bfgh-beh^2\right)\log\left(c\right)\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\text{log\_in}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (4*(a*f*g*h - a*e*h^2 + (b*f*g*h - b*e*h^2)*p*q*log(f*x + e) + (b*f*g*h - b
*e*h^2)*q*log(d) + (b*f*g*h - b*e*h^2)*log(c))*e^((b*q*log(d) + b*log(c) +
a)/(b*p*q))*log_integral((f^2*x^2 + 2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*log
(c) + a)/(b*p*q))) + (a*f^2*g^2 - 2*a*e*f*g*h + a*e^2*h^2 + (b*f^2*g^2 - 2*
b*e*f*g*h + b*e^2*h^2)*p*q*log(f*x + e) + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*
h^2)*q*log(d) + (b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))*e^(2*(b*q*log
(d) + b*log(c) + a)/(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(
c) + a)/(b*p*q))) - (b*f^3*h^2*p*q*x^3 + b*e*f^2*g^2*p*q + (2*b*f^3*g*h + b
*e*f^2*h^2)*p*q*x^2 + (b*f^3*g^2 + 2*b*e*f^2*g*h)*p*q*x)*e^(3*(b*q*log(d) +
 b*log(c) + a)/(b*p*q)) + 3*(b*h^2*p*q*log(f*x + e) + b*h^2*q*log(d) + b*h^
2*log(c) + a*h^2)*log_integral((f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x + e^3)*e^
(3*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)
/(b*p*q))/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*
p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**2, x)
```

Giac [B] time = 1.82072, size = 5462, normalized size = 16.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*f^2*g^2*p*q/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*lo
g(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) - 2*(f*x + e)^2*b*f*g*h*
p*q/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^
2*log(c) + a*b^2*f^3*p^2*q^2) - (f*x + e)^3*b*h^2*p*q/(b^3*f^3*p^3*q^3*log(
f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*
q^2) + 2*(f*x + e)*b*f*g*h*p*q*e/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^
2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) + 2*(f*x + e)^2*
b*h^2*p*q*e/(b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^
3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2) + b*f^2*g^2*p*q*Ei(log(d)/p + log(c)/
(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3
*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2
*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - (f*x + e)*b*h^2*p*q*e^2/(b^3*f^3*p^3*q
^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f
^3*p^2*q^2) - 2*b*f*g*h*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*
x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^
3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*
q))*d^(1/p)) + 4*b*f*g*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) +
 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x +
e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c
```

```
^(2/(p*q))*d^(2/p)) + b*f^2*g^2*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^
3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*
d^(1/p)) + b*h^2*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))
*e^(-a/(b*p*q) + 2)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p
^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(
1/p)) - 4*b*h^2*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*
x + e))*e^(-2*a/(b*p*q) + 1)*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x + e) +
b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(
p*q))*d^(2/p)) + 3*b*h^2*p*q*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) +
 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(f*x + e)/((b^3*f^3*p^3*q^3*log(f*x +
e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c
^(3/(p*q))*d^(3/p)) + b*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + lo
g(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*
p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^
(1/p)) - 2*b*f*g*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))
*e^(-a/(b*p*q) + 1)*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3
*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p))
+ 4*b*f*g*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e)
)*e^(-2*a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*
log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) +
 a*f^2*g^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q))/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2
*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 2*b*f*g*h*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)/((b
^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(
c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 4*b*f*g*h*Ei(2*log(d)/p + 2*
log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(c)/((b^3*
f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c)
+ a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + b*h^2*q*Ei(log(d)/p + log(c)/(p
*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)*log(d)/((b^3*f^3*p^3*q^3
*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3
*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*b*h^2*q*Ei(2*log(d)/p + 2*log(c)/(p*q) +
 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q) + 1)*log(d)/((b^3*f^3*p^3*q^
3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^
3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*b*h^2*q*Ei(3*log(d)/p + 3*log(c)/(p*q)
+ 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))*log(d)/((b^3*f^3*p^3*q^3*l
og(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p
^2*q^2)*c^(3/(p*q))*d^(3/p)) - 2*a*f*g*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*
p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^
3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*
q))*d^(1/p)) + 4*a*f*g*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*l
og(f*x + e))*e^(-2*a/(b*p*q))/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*
q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p
)) + b*h^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 2)*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) +
b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*b*h^2*
Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p
*q) + 1)*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b
^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*b*h^2*E
i(3*log(d)/p + 3*log(c)/(p*q) + 3*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*
q))*log(c)/((b^3*f^3*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^
3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^(3/(p*q))*d^(3/p)) + a*h^2*Ei(log(d
)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 2)/((b^3*f^3
*p^3*q^3*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a
*b^2*f^3*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - 4*a*h^2*Ei(2*log(d)/p + 2*log(c)/(
p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q) + 1)/((b^3*f^3*p^3*q^3
*log(f*x + e) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3
*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + 3*a*h^2*Ei(3*log(d)/p + 3*log(c)/(p*q) + 3
```

```
*a/(b*p*q) + 3*log(f*x + e))*e^(-3*a/(b*p*q))/((b^3*f^3*p^3*q^3*log(f*x + e
) + b^3*f^3*p^2*q^3*log(d) + b^3*f^3*p^2*q^2*log(c) + a*b^2*f^3*p^2*q^2)*c^
(3/(p*q))*d^(3/p))
```

3.451 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=224

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d\right.\right.\right.}{bp}\right.}{b^2f^2p^2q^2}$$

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b^2*E^(a/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h
*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e +
f*x)*(g + h*x))/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rubi [A] time = 0.621423, antiderivative size = 224, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d\right.\right.\right.}{bp}\right.}{b^2f^2p^2q^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(b^2*E^(a/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h
*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])/(
b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e +
f*x)*(g + h*x))/(b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{2\int \frac{g+hx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{bpq}, cd^q(e+fx$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{2\int \left(\frac{fg-eh}{f\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)} + \frac{h(e}{f(a+b\log(}\right.}{bpq}\right.$$

$$= -\frac{(e+fx)(g+hx)}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{(2h)\int \frac{e+fx}{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{bfpq}, cd^q(e+\right.$$

$$= -\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2} - \frac{(e}{bfpq\left(a+b\right.}$$

$$= -\frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2} - \frac{(e}{bfpq\left(a+b\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2f^2p^2q^2} + \frac{2e^{-\frac{2a}{bpq}}h(e+f}{}$$

Mathematica [A] time = 0.434131, size = 269, normalized size = 1.2

$$-\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(-e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right.\right.}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d\right.\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] -(((e + f*x)*(b*E^((2*a)/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(g
+ h*x) - E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*ExpInteg
ralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p
)^q]) - 2*h*(e + f*x)*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b
*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])))/(b^2*E^((2*a)/(b*p*q))*f^2*p^2*q^
2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])))
```

Maple [F] time = 0.265, size = 0, normalized size = 0.

$$\int \frac{hx+g}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{fhx^2 + eg + (fg + eh)x}{b^2 fpq \log\left(\left((fx+e)^p\right)^q\right) + abfpq + \left(fpq\log(c) + fpq\log(d^q)\right)b^2} + \int \frac{2\,fhx + fg + eh}{b^2 fpq \log\left(\left((fx+e)^p\right)^q\right) + abfpq + \left(fpq\log\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*h*x^2 + e*g + (f*g + e*h)*x)/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*
q + (f*p*q*log(c) + f*p*q*log(d^q))*b^2) + integrate((2*f*h*x + f*g + e*h)/
(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q*log(c) + f*p*q*log(d^q
))*b^2), x)
```

Fricas [A] time = 2.04315, size = 811, normalized size = 3.62

$$\frac{\left(\left((bfg - beh)pq\log(fx+e) + afg - aeh + (bfg - beh)q\log(d) + (bfg - beh)\log(c)\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}\operatorname{log\_integral}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] (((b*f*g - b*e*h)*p*q*log(f*x + e) + a*f*g - a*e*h + (b*f*g - b*e*h)*q*log(
d) + (b*f*g - b*e*h)*log(c))*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_in
tegral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) - (b*f^2*h*p*q*x^
2 + b*e*f*g*p*q + (b*f^2*g + b*e*f*h)*p*q*x)*e^(2*(b*q*log(d) + b*log(c) +
a)/(b*p*q)) + 2*(b*h*p*q*log(f*x + e) + b*h*q*log(d) + b*h*log(c) + a*h)*lo
g_integral((f^2*x^2 + 2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*
q))))*e^(-2*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3*f^2*p^3*q^3*log(f*x +
 e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{g + hx}{\left(a + b\log\left(c\left(d\left(e + fx\right)^p\right)^q\right)\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**2, x)
```

Giac [B] time = 1.46134, size = 2657, normalized size = 11.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*f*g*p*q/(b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d)
 + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2) - (f*x + e)^2*b*h*p*q/(b^3*f
^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) +
 a*b^2*f^2*p^2*q^2) + (f*x + e)*b*h*p*q*e/(b^3*f^2*p^3*q^3*log(f*x + e) + b
^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2) + b*f*g
*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*
log(f*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*
f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*p*q*Ei(l
og(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f
*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p
^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 2*b*h*p*q*Ei(2*lo
g(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*lo
g(f*x + e)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^
2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)) + b*f*g*q*Ei(log
(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^
3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c
) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + b*f*g*Ei(log(d)/p + log(c)/(p
*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3*f^2*p^3*q^3*log
(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2
*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) +
 log(f*x + e))*e^(-a/(b*p*q) + 1)*log(d)/((b^3*f^2*p^3*q^3*log(f*x + e) + b
^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p
*q))*d^(1/p)) + 2*b*h*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))*log(d)/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^
2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*
d^(2/p)) + a*f*g*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(
-a/(b*p*q))/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f
^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) - b*h*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)/((b
^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(
c) + a*b^2*f^2*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + 2*b*h*Ei(2*log(d)/p + 2*log(
c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(c)/((b^3*f^2*
p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*
b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)) - a*h*Ei(log(d)/p + log(c)/(p*q) + a/
(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^3*f^2*p^3*q^3*log(f*x + e) +
 b^3*f^2*p^2*q^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(1/
(p*q))*d^(1/p)) + 2*a*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))/((b^3*f^2*p^3*q^3*log(f*x + e) + b^3*f^2*p^2*q
^3*log(d) + b^3*f^2*p^2*q^2*log(c) + a*b^2*f^2*p^2*q^2)*c^(2/(p*q))*d^(2/p)
)
```

3.452 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=123

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2fp^2q^2}-\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b^2*E^
(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(b*f*p*q
*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rubi [A] time = 0.161389, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2fp^2q^2}-\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-2),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(b^2*E^
(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(b*f*p*q
*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^2}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{a+b\log(cd^q x^{pq})}\,dx, x, e+fx\right)}{bfpq}\right.$$

$$= -\frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}}{bfp}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^2fp^2q^2} - \frac{e+fx}{bfpq\left(a+b\log\left(c\left(d(e\right.\right.\right.}$$

Mathematica [A] time = 0.115151, size = 163, normalized size = 1.33

$$-\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(bpqe^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}-\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)\right)}{b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-2),x]
```

```
[Out] -(((e + f*x)*(b*E^(a/(b*p*q))*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q)) - ExpInte
gralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^
p)^q])))/(b^2*E^(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a +
b*Log[c*(d*(e + f*x)^p)^q])))
```

Maple [F] time = 0.266, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{fx+e}{b^2fpq\log\left(\left(\left(fx+e\right)^p\right)^q\right)+abfpq+\left(fpq\log\left(c\right)+fpq\log\left(d^q\right)\right)b^2}+\int\frac{1}{b^2pq\log\left(\left(\left(fx+e\right)^p\right)^q\right)+abpq+\left(pq\log\left(c\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q*log(c) + f*
p*q*log(d^q))*b^2) + integrate(1/(b^2*p*q*log(((f*x + e)^p)^q) + a*b*p*q +
(p*q*log(c) + p*q*log(d^q))*b^2), x)
```

Fricas [A] time = 1.88931, size = 425, normalized size = 3.46

$$-\frac{\left(\left(bfpqx+bepq\right)e^{\left(\frac{bq\log(d)+b\log(c)+a}{bpq}\right)}-\left(bpq\log\left(fx+e\right)+bq\log\left(d\right)+b\log\left(c\right)+a\right)\operatorname{log\_integral}\left(\left(fx+e\right)e^{\left(\frac{bq\log(d)+b\log}{bpq}\right.}\right.\right.}{b^3fp^3q^3\log\left(fx+e\right)+b^3fp^2q^3\log\left(d\right)+b^3fp^2q^2\log\left(c\right)+ab^2fp^2q^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] -((b*f*p*q*x + b*e*p*q)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q)) - (b*p*q*lo
g(f*x + e) + b*q*log(d) + b*log(c) + a)*log_integral((f*x + e)*e^((b*q*log(
d) + b*log(c) + a)/(b*p*q))))*e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^3
*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b
^2*f*p^2*q^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-2), x)
```

Giac [B] time = 1.33341, size = 801, normalized size = 6.51

$$-\frac{\left(fx+e\right)bpq}{b^3fp^3q^3\log\left(fx+e\right)+b^3fp^2q^3\log\left(d\right)+b^3fp^2q^2\log\left(c\right)+ab^2fp^2q^2}+\frac{bpq\operatorname{Ei}\left(\frac{\log(d)}{p}+\frac{\log(c)}{pq}+\frac{a}{bpq}+\log\left(fx\right.\right.}{\left(b^3fp^3q^3\log\left(fx+e\right)+b^3fp^2q^3\log\left(d\right)+b^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] -(f*x + e)*b*p*q/(b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f
*p^2*q^2*log(c) + a*b^2*f*p^2*q^2) + b*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(
b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^3*f*p^3*q^3*log(f*x
+ e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/
(p*q))*d^(1/p)) + b*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e)
)*e^(-a/(b*p*q))*log(d)/((b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d)
 + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + b*Ei(log(
d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^3
*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b
^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p)) + a*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*
q) + log(f*x + e))*e^(-a/(b*p*q))/((b^3*f*p^3*q^3*log(f*x + e) + b^3*f*p^2*
q^3*log(d) + b^3*f*p^2*q^2*log(c) + a*b^2*f*p^2*q^2)*c^(1/(p*q))*d^(1/p))
```

3.453 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi [A] time = 0.0646748, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx = \int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 1.32572, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A] time = 0.657, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$(fg-eh)\int \frac{1}{abfg^2pq+\left(fg^2pq\log\left(c\right)+fg^2pq\log\left(d^q\right)\right)b^2+\left(abfh^2pq+\left(fh^2pq\log\left(c\right)+fh^2pq\log\left(d^q\right)\right)b^2\right)x^2+2\left(abfg\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] (f*g - e*h)*integrate(1/(a*b*f*g^2*p*q + (f*g^2*p*q*log(c) + f*g^2*p*q*log(
d^q))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q*log(c) + f*h^2*p*q*log(d^q))*b^2)*x
^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q*log(c) + f*g*h*p*q*log(d^q))*b^2)*x + (b
^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q))
, x) - (f*x + e)/(a*b*f*g*p*q + (f*g*p*q*log(c) + f*g*p*q*log(d^q))*b^2 + (
a*b*f*h*p*q + (f*h*p*q*log(c) + f*h*p*q*log(d^q))*b^2)*x + (b^2*f*h*p*q*x +
 b^2*f*g*p*q)*log(((f*x + e)^p)^q))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2hx+a^2g+\left(b^2hx+b^2g\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+2\left(abhx+abg\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)^q*c)^2
+ 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

3.454 $\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi [A] time = 0.0621928, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]

[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 18.2729, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]

[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A] time = 0.665, size = 0, normalized size = 0.

$$\int \frac{1}{\left(hx+g\right)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{fx+e}{abfg^2pq+\left(fg^2pq\log(c)+fg^2pq\log(d^q)\right)b^2+\left(abfh^2pq+\left(fh^2pq\log(c)+fh^2pq\log(d^q)\right)b^2\right)x^2+2\left(abfghpq+\left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)/(a*b*f*g^2*p*q + (f*g^2*p*q*log(c) + f*g^2*p*q*log(d^q))*b^2 + (
a*b*f*h^2*p*q + (f*h^2*p*q*log(c) + f*h^2*p*q*log(d^q))*b^2)*x^2 + 2*(a*b*f
*g*h*p*q + (f*g*h*p*q*log(c) + f*g*h*p*q*log(d^q))*b^2)*x + (b^2*f*h^2*p*q*
x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q)) - integrate(
(f*h*x - f*g + 2*e*h)/(a*b*f*g^3*p*q + (a*b*f*h^3*p*q + (f*h^3*p*q*log(c) +
 f*h^3*p*q*log(d^q))*b^2)*x^3 + (f*g^3*p*q*log(c) + f*g^3*p*q*log(d^q))*b^2
 + 3*(a*b*f*g*h^2*p*q + (f*g*h^2*p*q*log(c) + f*g*h^2*p*q*log(d^q))*b^2)*x^
2 + 3*(a*b*f*g^2*h*p*q + (f*g^2*h*p*q*log(c) + f*g^2*h*p*q*log(d^q))*b^2)*x
 + (b^2*f*h^3*p*q*x^3 + 3*b^2*f*g*h^2*p*q*x^2 + 3*b^2*f*g^2*h*p*q*x + b^2*f
*g^3*p*q)*log(((f*x + e)^p)^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2h^2x^2+2\,a^2ghx+a^2g^2+\left(b^2h^2x^2+2\,b^2ghx+b^2g^2\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+2\left(abh^2x^2+2\,abghx+abg^2\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*h^2*x^2 + 2*a^2*g*h*x + a^2*g^2 + (b^2*h^2*x^2 + 2*b^2*g*h*
x + b^2*g^2)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*b*h^2*x^2 + 2*a*b*g*h*x + a*
b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

3.455 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=432

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^3f^3p^3q^3}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}}{2b^3f^3p^3q^3}$$

```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(2*b^3*E^(a/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) +
(4*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(b^3*E^((2*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/
(p*q))) + (9*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(
3/(p*q))) - ((e + f*x)*(g + h*x)^2)/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q])^2) + ((f*g - e*h)*(e + f*x)*(g + h*x))/(b^2*f^2*p^2*q^2*(a + b*Log[c*(
d*(e + f*x)^p)^q])) - (3*(e + f*x)*(g + h*x)^2)/(2*b^2*f*p^2*q^2*(a + b*Log
[c*(d*(e + f*x)^p)^q]))
```

Rubi [A] time = 2.13421, antiderivative size = 432, normalized size of antiderivative = 1., number of steps used = 34, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2445}

$$\frac{4h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{b^3f^3p^3q^3}+\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}}{2b^3f^3p^3q^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```


```
[Out] ((f*g - e*h)^2*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*
p*q)])/(2*b^3*E^(a/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) +
(4*h*(f*g - e*h)*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(b^3*E^((2*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/
(p*q))) + (9*h^2*(e + f*x)^3*ExpIntegralEi[(3*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(b*p*q)])/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(
3/(p*q))) - ((e + f*x)*(g + h*x)^2)/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q])^2) + ((f*g - e*h)*(e + f*x)*(g + h*x))/(b^2*f^2*p^2*q^2*(a + b*Log[c*(
d*(e + f*x)^p)^q])) - (3*(e + f*x)*(g + h*x)^2)/(2*b^2*f*p^2*q^2*(a + b*Log
[c*(d*(e + f*x)^p)^q]))
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{3\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx}{2bpq}, cd^q\right.$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+hx)}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+hx)}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

$$= -\frac{(e+fx)(g+hx)^2}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)(g+hx)}{b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^3f^3p^3q^3} - \frac{}{2bfpq\left(a\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{b^3f^3p^3q^3} - \frac{}{2bfpq\left(a\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^3p^3q^3} + \frac{4e^{-\frac{2a}{bpq}}h(}{}$$

Mathematica [A] time = 2.29149, size = 438, normalized size = 1.01

$$\frac{(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(-8h(e+fx)e^{\frac{a}{bpq}}(eh-fg)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\text{Ei}\left(\frac{2(a+}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] ((e + f*x)*(E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))
*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2 - 8*E^(a/(b*p*q))*h*(-(f*g) + e*h)*(e + f*x)*(c*(d*(e + f*
x)^p)^q)^(1/(p*q))*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*
q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + 9*h^2*(e + f*x)^2*ExpIntegralEi[(3
*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q]
)^2 - b*E^((3*a)/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(g + h*x)*(
b*f*p*q*(g + h*x) + a*(f*g + 2*e*h + 3*f*h*x) + b*(2*e*h + f*(g + 3*h*x))*L
```

```
og[c*(d*(e + f*x)^p)^q])))/(2*b^3*E^((3*a)/(b*p*q))*f^3*p^3*q^3*(c*(d*(e +
f*x)^p)^q)^(3/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
```

Maple [F] time = 0.491, size = 0, normalized size = 0.

$$\int \frac{\left(hx+g\right)^{2}}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((3*a*f^2*h^2 + (f^2*h^2*p*q + 3*f^2*h^2*log(c) + 3*f^2*h^2*log(d^q))*
b)*x^3 + ((4*f^2*g*h + 5*e*f*h^2)*a + (2*f^2*g*h*p*q + e*f*h^2*p*q + (4*f^2
*g*h + 5*e*f*h^2)*log(c) + (4*f^2*g*h + 5*e*f*h^2)*log(d^q))*b)*x^2 + (e*f*
g^2 + 2*e^2*g*h)*a + (e*f*g^2*p*q + (e*f*g^2 + 2*e^2*g*h)*log(c) + (e*f*g^2
 + 2*e^2*g*h)*log(d^q))*b + ((f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*a + (f^2*g^2
*p*q + 2*e*f*g*h*p*q + (f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*log(c) + (f^2*g^2
+ 6*e*f*g*h + 2*e^2*h^2)*log(d^q))*b)*x + (3*b*f^2*h^2*x^3 + (4*f^2*g*h + 5
*e*f*h^2)*b*x^2 + (f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*b*x + (e*f*g^2 + 2*e^2*
g*h)*b)*log(((f*x + e)^p)^q))/(b^4*f^2*p^2*q^2*log(((f*x + e)^p)^q)^2 + a^2
*b^2*f^2*p^2*q^2 + 2*(f^2*p^2*q^2*log(c) + f^2*p^2*q^2*log(d^q))*a*b^3 + (f
^2*p^2*q^2*log(c)^2 + 2*f^2*p^2*q^2*log(c)*log(d^q) + f^2*p^2*q^2*log(d^q)^
2)*b^4 + 2*(a*b^3*f^2*p^2*q^2 + (f^2*p^2*q^2*log(c) + f^2*p^2*q^2*log(d^q))
*b^4)*log(((f*x + e)^p)^q)) + integrate(1/2*(9*f^2*h^2*x^2 + f^2*g^2 + 6*e*
f*g*h + 2*e^2*h^2 + 2*(4*f^2*g*h + 5*e*f*h^2)*x)/(b^3*f^2*p^2*q^2*log(((f*x
 + e)^p)^q) + a*b^2*f^2*p^2*q^2 + (f^2*p^2*q^2*log(c) + f^2*p^2*q^2*log(d^q
))*b^3), x)
```

Fricas [B] time = 2.42086, size = 3706, normalized size = 8.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(8*((b^2*f*g*h - b^2*e*h^2)*p^2*q^2*log(f*x + e)^2 + a^2*f*g*h - a^2*e*
h^2 + (b^2*f*g*h - b^2*e*h^2)*q^2*log(d)^2 + (b^2*f*g*h - b^2*e*h^2)*log(c)
^2 + 2*((b^2*f*g*h - b^2*e*h^2)*p*q^2*log(d) + (b^2*f*g*h - b^2*e*h^2)*p*q*
```

```
log(c) + (a*b*f*g*h - a*b*e*h^2)*p*q)*log(f*x + e) + 2*(a*b*f*g*h - a*b*e*h
^2)*log(c) + 2*((b^2*f*g*h - b^2*e*h^2)*q*log(c) + (a*b*f*g*h - a*b*e*h^2)*
q)*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))*log_integral((f^2*x^2 +
2*e*f*x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))) + ((b^2*f^2*g^2 -
 2*b^2*e*f*g*h + b^2*e^2*h^2)*p^2*q^2*log(f*x + e)^2 + a^2*f^2*g^2 - 2*a^2*
e*f*g*h + a^2*e^2*h^2 + (b^2*f^2*g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*q^2*log
(d)^2 + (b^2*f^2*g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*log(c)^2 + 2*((b^2*f^2*
g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*p*q^2*log(d) + (b^2*f^2*g^2 - 2*b^2*e*f*
g*h + b^2*e^2*h^2)*p*q*log(c) + (a*b*f^2*g^2 - 2*a*b*e*f*g*h + a*b*e^2*h^2)
*p*q)*log(f*x + e) + 2*(a*b*f^2*g^2 - 2*a*b*e*f*g*h + a*b*e^2*h^2)*log(c) +
 2*((b^2*f^2*g^2 - 2*b^2*e*f*g*h + b^2*e^2*h^2)*q*log(c) + (a*b*f^2*g^2 - 2
*a*b*e*f*g*h + a*b*e^2*h^2)*q)*log(d))*e^(2*(b*q*log(d) + b*log(c) + a)/(b*
p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) - (b^
2*e*f^2*g^2*p^2*q^2 + (b^2*f^3*h^2*p^2*q^2 + 3*a*b*f^3*h^2*p*q)*x^3 + (a*b*
e*f^2*g^2 + 2*a*b*e^2*f*g*h)*p*q + ((2*b^2*f^3*g*h + b^2*e*f^2*h^2)*p^2*q^2
 + (4*a*b*f^3*g*h + 5*a*b*e*f^2*h^2)*p*q)*x^2 + ((b^2*f^3*g^2 + 2*b^2*e*f^2
*g*h)*p^2*q^2 + (a*b*f^3*g^2 + 6*a*b*e*f^2*g*h + 2*a*b*e^2*f*h^2)*p*q)*x +
(3*b^2*f^3*h^2*p^2*q^2*x^3 + (4*b^2*f^3*g*h + 5*b^2*e*f^2*h^2)*p^2*q^2*x^2
+ (b^2*f^3*g^2 + 6*b^2*e*f^2*g*h + 2*b^2*e^2*f*h^2)*p^2*q^2*x + (b^2*e*f^2*
g^2 + 2*b^2*e^2*f*g*h)*p^2*q^2)*log(f*x + e) + (3*b^2*f^3*h^2*p*q*x^3 + (4*
b^2*f^3*g*h + 5*b^2*e*f^2*h^2)*p*q*x^2 + (b^2*f^3*g^2 + 6*b^2*e*f^2*g*h + 2
*b^2*e^2*f*h^2)*p*q*x + (b^2*e*f^2*g^2 + 2*b^2*e^2*f*g*h)*p*q)*log(c) + (3*
b^2*f^3*h^2*p*q^2*x^3 + (4*b^2*f^3*g*h + 5*b^2*e*f^2*h^2)*p*q^2*x^2 + (b^2*
f^3*g^2 + 6*b^2*e*f^2*g*h + 2*b^2*e^2*f*h^2)*p*q^2*x + (b^2*e*f^2*g^2 + 2*b
^2*e^2*f*g*h)*p*q^2)*log(d))*e^(3*(b*q*log(d) + b*log(c) + a)/(b*p*q)) + 9*
(b^2*h^2*p^2*q^2*log(f*x + e)^2 + b^2*h^2*q^2*log(d)^2 + b^2*h^2*log(c)^2 +
 2*a*b*h^2*log(c) + a^2*h^2 + 2*(b^2*h^2*p*q^2*log(d) + b^2*h^2*p*q*log(c)
+ a*b*h^2*p*q)*log(f*x + e) + 2*(b^2*h^2*q*log(c) + a*b*h^2*q)*log(d))*log_
integral((f^3*x^3 + 3*e*f^2*x^2 + 3*e^2*f*x + e^3)*e^(3*(b*q*log(d) + b*log
(c) + a)/(b*p*q))))*e^(-3*(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^5*f^3*p^5
*q^5*log(f*x + e)^2 + b^5*f^3*p^3*q^5*log(d)^2 + b^5*f^3*p^3*q^3*log(c)^2 +
 2*a*b^4*f^3*p^3*q^3*log(c) + a^2*b^3*f^3*p^3*q^3 + 2*(b^5*f^3*p^4*q^5*log(
d) + b^5*f^3*p^4*q^4*log(c) + a*b^4*f^3*p^4*q^4)*log(f*x + e) + 2*(b^5*f^3*
p^3*q^4*log(c) + a*b^4*f^3*p^3*q^4)*log(d))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] Timed out
```

3.456 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=322

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(\right.\right.\right.}{bp}\right.}{b^3f^2p^3q^3}$$

```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(2*b^3*E^(a/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2
*h*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])
/(b^3*E^((2*a)/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e
+ f*x)*(g + h*x))/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) + ((f*g -
e*h)*(e + f*x))/(2*b^2*f^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) - ((e
+ f*x)*(g + h*x))/(b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```

Rubi [A] time = 0.925535, antiderivative size = 322, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {2400, 2399, 2389, 2300, 2178, 2390, 2310, 2297, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3}+\frac{2h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Ei}\left(\frac{2\left(a+b\log\left(c\left(\right.\right.\right.}{bp}\right.}{b^3f^2p^3q^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```


```
[Out] ((f*g - e*h)*(e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*
q)])/(2*b^3*E^(a/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2
*h*(e + f*x)^2*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(b*p*q)])
/(b^3*E^((2*a)/(b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - ((e
+ f*x)*(g + h*x))/(2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) + ((f*g -
e*h)*(e + f*x))/(2*b^2*f^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])) - ((e
+ f*x)*(g + h*x))/(b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2399

```
Int[((f_.) + (g_.)*(x_))^(q_.)/((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)
]*(b_.)), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q/(a + b*Log[c*(d + e*
x)^n]), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] &
& IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}\,dx}{bpq}, cd^q(e+\right.$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{(e+fx)(g+hx)}{b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{S}$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)}{2b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} -$$

$$= -\frac{(e+fx)(g+hx)}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \frac{(fg-eh)(e+fx)}{2b^2f^2p^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} -$$

$$= -\frac{3e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3} - \frac{(}{2bfpq\left(a+\right.}$$

$$= -\frac{3e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3} - \frac{(}{2bfpq\left(a+\right.}$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3f^2p^3q^3} + \frac{2e^{-\frac{2a}{bpq}}h(e+f}{}$$

Mathematica [A] time = 0.735854, size = 322, normalized size = 1.

$$-\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(-e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^3,x]
```

```
[Out] -((e + f*x)*(-(E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Ex
pIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a + b*Log[c*(d*(e +
f*x)^p)^q])^2) - 4*h*(e + f*x)*ExpIntegralEi[(2*(a + b*Log[c*(d*(e + f*x)^p
)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2 + b*E^((2*a)/(b*p*q))*p*
q*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(b*f*p*q*(g + h*x) + a*(f*g + e*h + 2*f*h
*x) + b*(e*h + f*(g + 2*h*x))*Log[c*(d*(e + f*x)^p)^q])))/(2*b^3*E^((2*a)/(
b*p*q))*f^2*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2)
```

Maple [F] time = 0.267, size = 0, normalized size = 0.

$$\int \frac{hx+g}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(2\,af^{2}h+\left(f^{2}hpq+2\,f^{2}h\log\left(c\right)+2\,f^{2}h\log\left(d^{q}\right)\right)b\right)x^{2}+\left(efg+e^{2}h\right)a+\left(efgpq+\left(efg+e^{2}h\right)\log\left(c\right)+\left(efg+e^{2}h\right)\right.}{2\left(b^{4}f^{2}p^{2}q^{2}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2}+a^{2}b^{2}f^{2}p^{2}q^{2}+2\left(f^{2}p^{2}q^{2}\log\left(c\right)+f^{2}p^{2}q^{2}\log\left(d^{q}\right)\right)ab^{3}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((2*a*f^2*h + (f^2*h*p*q + 2*f^2*h*log(c) + 2*f^2*h*log(d^q))*b)*x^2 +
 (e*f*g + e^2*h)*a + (e*f*g*p*q + (e*f*g + e^2*h)*log(c) + (e*f*g + e^2*h)*
log(d^q))*b + ((f^2*g + 3*e*f*h)*a + (f^2*g*p*q + e*f*h*p*q + (f^2*g + 3*e*
f*h)*log(c) + (f^2*g + 3*e*f*h)*log(d^q))*b)*x + (2*b*f^2*h*x^2 + (f^2*g +
3*e*f*h)*b*x + (e*f*g + e^2*h)*b)*log(((f*x + e)^p)^q))/(b^4*f^2*p^2*q^2*lo
g(((f*x + e)^p)^q)^2 + a^2*b^2*f^2*p^2*q^2 + 2*(f^2*p^2*q^2*log(c) + f^2*p^
2*q^2*log(d^q))*a*b^3 + (f^2*p^2*q^2*log(c)^2 + 2*f^2*p^2*q^2*log(c)*log(d^
q) + f^2*p^2*q^2*log(d^q)^2)*b^4 + 2*(a*b^3*f^2*p^2*q^2 + (f^2*p^2*q^2*log(
c) + f^2*p^2*q^2*log(d^q))*b^4)*log(((f*x + e)^p)^q)) + integrate(1/2*(4*f*
h*x + f*g + 3*e*h)/(b^3*f*p^2*q^2*log(((f*x + e)^p)^q) + a*b^2*f*p^2*q^2 +
(f*p^2*q^2*log(c) + f*p^2*q^2*log(d^q))*b^3), x)
```

Fricas [B] time = 2.19165, size = 2130, normalized size = 6.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] 1/2*(((b^2*f*g - b^2*e*h)*p^2*q^2*log(f*x + e)^2 + (b^2*f*g - b^2*e*h)*q^2*
log(d)^2 + a^2*f*g - a^2*e*h + (b^2*f*g - b^2*e*h)*log(c)^2 + 2*((b^2*f*g -
 b^2*e*h)*p*q^2*log(d) + (b^2*f*g - b^2*e*h)*p*q*log(c) + (a*b*f*g - a*b*e*
h)*p*q)*log(f*x + e) + 2*(a*b*f*g - a*b*e*h)*log(c) + 2*((b^2*f*g - b^2*e*h
)*q*log(c) + (a*b*f*g - a*b*e*h)*q)*log(d))*e^((b*q*log(d) + b*log(c) + a)/
(b*p*q))*log_integral((f*x + e)*e^((b*q*log(d) + b*log(c) + a)/(b*p*q))) -
(b^2*e*f*g*p^2*q^2 + (a*b*e*f*g + a*b*e^2*h)*p*q + (b^2*f^2*h*p^2*q^2 + 2*a
*b*f^2*h*p*q)*x^2 + ((b^2*f^2*g + b^2*e*f*h)*p^2*q^2 + (a*b*f^2*g + 3*a*b*e
*f*h)*p*q)*x + (2*b^2*f^2*h*p^2*q^2*x^2 + (b^2*f^2*g + 3*b^2*e*f*h)*p^2*q^2
```

```
*x + (b^2*e*f*g + b^2*e^2*h)*p^2*q^2)*log(f*x + e) + (2*b^2*f^2*h*p*q*x^2 +
 (b^2*f^2*g + 3*b^2*e*f*h)*p*q*x + (b^2*e*f*g + b^2*e^2*h)*p*q)*log(c) + (2
*b^2*f^2*h*p*q^2*x^2 + (b^2*f^2*g + 3*b^2*e*f*h)*p*q^2*x + (b^2*e*f*g + b^2
*e^2*h)*p*q^2)*log(d))*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q)) + 4*(b^2*h
*p^2*q^2*log(f*x + e)^2 + b^2*h*q^2*log(d)^2 + b^2*h*log(c)^2 + 2*a*b*h*log
(c) + a^2*h + 2*(b^2*h*p*q^2*log(d) + b^2*h*p*q*log(c) + a*b*h*p*q)*log(f*x
 + e) + 2*(b^2*h*q*log(c) + a*b*h*q)*log(d))*log_integral((f^2*x^2 + 2*e*f*
x + e^2)*e^(2*(b*q*log(d) + b*log(c) + a)/(b*p*q))))*e^(-2*(b*q*log(d) + b*
log(c) + a)/(b*p*q))/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + b^5*f^2*p^3*q^5*log(
d)^2 + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*
p^3*q^3 + 2*(b^5*f^2*p^4*q^5*log(d) + b^5*f^2*p^4*q^4*log(c) + a*b^4*f^2*p^
4*q^4)*log(f*x + e) + 2*(b^5*f^2*p^3*q^4*log(c) + a*b^4*f^2*p^3*q^4)*log(d)
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.15156, size = 15570, normalized size = 48.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*f*g*p^2*q^2*log(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2
 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*l
og(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5
*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4
*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e)^2*b
^2*h*p^2*q^2*log(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q
^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^
3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c
)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*
f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p^2*q^2*e*l
og(f*x + e)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e
)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2
 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5
*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*lo
g(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*b^2*f*g*p^2*q^2*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/((b^5*f^2*p^5*q
^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q
^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log
(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*
a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3
)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*f*g*p^2*q^2/(b^5*f^2*p^5*q^5*log
(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log
```

```
(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x +
 e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*
f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - 1/
2*(f*x + e)^2*b^2*h*p^2*q^2/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4
*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*
p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log
(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^
4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p^2*q^2*e
/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) +
2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*
f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^
3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*
b^3*f^2*p^3*q^3) - 1/2*b^2*h*p^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
 + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)^2/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) + 2*b^2*h*p^2*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q
) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)^2/((b^5*f^2*p^5*q^5*log(f
*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f
*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e
) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^
2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(
p*q))*d^(2/p)) - 1/2*(f*x + e)*b^2*f*g*p*q^2*log(d)/(b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x
+ e)^2*b^2*h*p*q^2*log(d)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q
^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^
3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c
)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*
f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p*q^2*e*log
(d)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d)
 + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b
^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3
*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a
^2*b^3*f^2*p^3*q^3) + b^2*f*g*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*f*g*p*q*log(c)/(b^5*f^2*p^5*q^5*log(f*x +
 e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x +
 e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) +
2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^
3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e
)^2*b^2*h*p*q*log(c)/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*lo
g(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5
*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log
(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p
^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + 1/2*(f*x + e)*b^2*h*p*q*e*log(c)/(b^
5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^
5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*
p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*lo
g(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*
f^2*p^3*q^3) + b^2*f*g*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x
```

```
 + e))*e^(-a/(b*p*q))*log(f*x + e)*log(c)/((b^5*f^2*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*lo
g(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*
f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*
log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1
/p)) - b^2*h*p*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e
^(-a/(b*p*q) + 1)*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*
b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*
p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(
d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p))
 + 4*b^2*h*p*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x +
 e))*e^(-2*a/(b*p*q))*log(f*x + e)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*lo
g(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*
f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*
log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2
/p)) + 1/2*b^2*f*g*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e
))*e^(-a/(b*p*q))*log(d)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4
*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*
p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log
(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^
4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x
 + e)*a*b*f*g*p*q/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f
*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*lo
g(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d)
 + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*
q^3*log(c) + a^2*b^3*f^2*p^3*q^3) - (f*x + e)^2*a*b*h*p*q/(b^5*f^2*p^5*q^5*
log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*
log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*
x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b
^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) +
 1/2*(f*x + e)*a*b*h*p*q*e/(b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*
q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p
^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(
c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4
*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3) + a*b*f*g*p*q*Ei(log(d)/p + log(
c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)/((b^5*f^2*
p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*
p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^
4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2
 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^
3*q^3)*c^(1/(p*q))*d^(1/p)) - b^2*h*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p
*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(f*x + e)*log(c)/((b^5*f^2*p^5*q^
5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^
4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(
f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a
*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)
*c^(1/(p*q))*d^(1/p)) + 4*b^2*h*p*q*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b
*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x + e)*log(c)/((b^5*f^2*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*
q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*lo
g(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2
*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^
3)*c^(2/(p*q))*d^(2/p)) + b^2*f*g*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(c)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)
^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)
*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b
^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q
```

^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d
^(1/p)) - 1/2*b^2*h*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x +
e))*e^(-a/(b*p*q) + 1)*log(d)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^
2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5
*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^
4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2
*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 2*b
^2*h*q^2*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(
-2*a/(b*p*q))*log(d)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5
*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*
q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*
log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^
2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) - a*b*h*p*q*Ei
(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log
(f*x + e)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)
*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2
+ 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*
f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log
(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*a*b*h*p*q*Ei(2*log(d)/p
 + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log(f*x
+ e)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(
d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a
*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p
^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) +
 a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) + 1/2*b^2*f*g*Ei(log(d)/p + log(
c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)^2/((b^5*f^2*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*
q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*lo
g(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2
*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^
3)*c^(1/(p*q))*d^(1/p)) + a*b*f*g*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q)
+ log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*
b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*
p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(
d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p))
 - b^2*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 1)*log(c)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^
5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3
*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)
*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f
^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*b^2*h*q*E
i(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*
q))*log(c)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(
f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*l
og(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d
) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3
*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) + a*b*f*g*Ei(log(d)
/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^5*f
^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f
^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4
*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c
)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2
*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*b^2*h*Ei(log(d)/p + log(c)/(p*q) + a/(
b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)*log(c)^2/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p

*q))*d^(1/p)) + 2*b^2*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*lo
g(f*x + e))*e^(-2*a/(b*p*q))*log(c)^2/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*
b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*
p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(
d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p))
 - a*b*h*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*
p*q) + 1)*log(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f
*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*lo
g(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d)
 + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*
q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*a*b*h*q*Ei(2*log
(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))*log
(d)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d
) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*
b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^
3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) +
a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) + 1/2*a^2*f*g*Ei(log(d)/p + log(c
)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))/((b^5*f^2*p^5*q^5*log(f*
x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*
x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e)
 + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2
*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p
*q))*d^(1/p)) - a*b*h*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e)
)*e^(-a/(b*p*q) + 1)*log(c)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^
4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2
*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*lo
g(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b
^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + 4*a*b*h
*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*p*q) + 2*log(f*x + e))*e^(-2*a/(b*
p*q))*log(c)/((b^5*f^2*p^5*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x +
 e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)
^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b
^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*
log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p)) - 1/2*a^2*h*Ei(log(d)/p
+ log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q) + 1)/((b^5*f^2*p^5
*q^5*log(f*x + e)^2 + 2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4
*q^4*log(f*x + e)*log(c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*l
og(f*x + e) + 2*b^5*f^2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 +
2*a*b^4*f^2*p^3*q^4*log(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q
^3)*c^(1/(p*q))*d^(1/p)) + 2*a^2*h*Ei(2*log(d)/p + 2*log(c)/(p*q) + 2*a/(b*
p*q) + 2*log(f*x + e))*e^(-2*a/(b*p*q))/((b^5*f^2*p^5*q^5*log(f*x + e)^2 +
2*b^5*f^2*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f^2*p^4*q^4*log(f*x + e)*log(
c) + b^5*f^2*p^3*q^5*log(d)^2 + 2*a*b^4*f^2*p^4*q^4*log(f*x + e) + 2*b^5*f^
2*p^3*q^4*log(c)*log(d) + b^5*f^2*p^3*q^3*log(c)^2 + 2*a*b^4*f^2*p^3*q^4*lo
g(d) + 2*a*b^4*f^2*p^3*q^3*log(c) + a^2*b^3*f^2*p^3*q^3)*c^(2/(p*q))*d^(2/p
))

3.457 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=169

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3fp^3q^3}-\frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{e\cdots}{2bfpq\left(a+b\log\cdots\right.}$$

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(2*b^3*
E^(a/(b*p*q))*f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(2*b*f
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) - (e + f*x)/(2*b^2*f*p^2*q^2*(a +
b*Log[c*(d*(e + f*x)^p)^q]))
```

Rubi [A] time = 0.21492, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2389, 2297, 2300, 2178, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3fp^3q^3}-\frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}-\frac{e\cdots}{2bfpq\left(a+b\log\cdots\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3),x]
```

```
[Out] ((e + f*x)*ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)])/(2*b^3*
E^(a/(b*p*q))*f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (e + f*x)/(2*b*f
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2) - (e + f*x)/(2*b^2*f*p^2*q^2*(a +
b*Log[c*(d*(e + f*x)^p)^q]))
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2178

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/((c_.) + (d_.)*(x_)), x_Symbol] :> Si
mp[(F^(g*(e - (c*f)/d))*ExpIntegralEi[(f*g*(c + d*x)*Log[F])/d])/d, x] /; F
```

```
reeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^3}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} + \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^2}\,dx, x, e+\right.}{2bfpq}\right.$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{S}$$

$$= -\frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2} - \frac{e+fx}{2b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)} + \text{S}$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Ei}\left(\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)}{2b^3fp^3q^3} - \frac{e+fx}{2bfpq\left(a+b\log\left(c\left(d(\right.\right.\right.}$$

Mathematica [A] time = 0.203043, size = 189, normalized size = 1.12

$$-\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(bpqe^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)+bpq\right)-\left(a+b\log\left(c\left(d(e+\right.\right.\right.\right.}{2b^3fp^3q^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3),x]
```

```
[Out] -((e + f*x)*(-(ExpIntegralEi[(a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)]*(a +
 b*Log[c*(d*(e + f*x)^p)^q])^2) + b*E^(a/(b*p*q))*p*q*(c*(d*(e + f*x)^p)^q)
^(1/(p*q))*(a + b*p*q + b*Log[c*(d*(e + f*x)^p)^q])))/(2*b^3*E^(a/(b*p*q))*
f*p^3*q^3*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^
2)
```

Maple [F] time = 0.263, size = 0, normalized size = 0.

$$\int \left(a + b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\frac{\left(epq + e\log\left(c\right) + e\log\left(d^{q}\right)\right)b + ae + \left(\left(fpq + f\log\left(c\right) + f\log\right.\right.}{2\left(b^{4}fp^{2}q^{2}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2} + a^{2}b^{2}fp^{2}q^{2} + 2\left(fp^{2}q^{2}\log\left(c\right) + fp^{2}q^{2}\log\left(d^{q}\right)\right)ab^{3} + \left(fp^{2}q^{2}\log\left(c\right)^{2} + 2\,fp^{2}q^{2}\log\left(\right.\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*((e*p*q + e*log(c) + e*log(d^q))*b + a*e + ((f*p*q + f*log(c) + f*log(
d^q))*b + a*f)*x + (b*f*x + b*e)*log(((f*x + e)^p)^q))/(b^4*f*p^2*q^2*log((
(f*x + e)^p)^q)^2 + a^2*b^2*f*p^2*q^2 + 2*(f*p^2*q^2*log(c) + f*p^2*q^2*log
(d^q))*a*b^3 + (f*p^2*q^2*log(c)^2 + 2*f*p^2*q^2*log(c)*log(d^q) + f*p^2*q^
2*log(d^q)^2)*b^4 + 2*(a*b^3*f*p^2*q^2 + (f*p^2*q^2*log(c) + f*p^2*q^2*log(
d^q))*b^4)*log(((f*x + e)^p)^q)) + integrate(1/2/(b^3*p^2*q^2*log(((f*x + e
)^p)^q) + a*b^2*p^2*q^2 + (p^2*q^2*log(c) + p^2*q^2*log(d^q))*b^3), x)
```

Fricas [B] time = 1.94252, size = 1053, normalized size = 6.23

$$-\frac{\left(\left(b^{2}ep^{2}q^{2} + abepq + \left(b^{2}fp^{2}q^{2} + abfpq\right)x + \left(b^{2}fp^{2}q^{2}x + b^{2}ep^{2}q^{2}\right)\log\left(fx+e\right) + \left(b^{2}fpqx + b^{2}epq\right)\log\left(c\right) + \left(b^{2}fpq^{2}\right.\right.\right.}{2\left(b^{5}fp^{5}q^{5}\log\left(fx+e\right)^{2} + b^{5}fp^{3}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b^2*e*p^2*q^2 + a*b*e*p*q + (b^2*f*p^2*q^2 + a*b*f*p*q)*x + (b^2*f*p
^2*q^2*x + b^2*e*p^2*q^2)*log(f*x + e) + (b^2*f*p*q*x + b^2*e*p*q)*log(c) +
 (b^2*f*p*q^2*x + b^2*e*p*q^2)*log(d))*e^((b*q*log(d) + b*log(c) + a)/(b*p*
q)) - (b^2*p^2*q^2*log(f*x + e)^2 + b^2*q^2*log(d)^2 + b^2*log(c)^2 + 2*a*b
*log(c) + a^2 + 2*(b^2*p*q^2*log(d) + b^2*p*q*log(c) + a*b*p*q)*log(f*x + e
) + 2*(b^2*q*log(c) + a*b*q)*log(d))*log_integral((f*x + e)*e^((b*q*log(d)
+ b*log(c) + a)/(b*p*q))))*e^(-(b*q*log(d) + b*log(c) + a)/(b*p*q))/(b^5*f*
p^5*q^5*log(f*x + e)^2 + b^5*f*p^3*q^5*log(d)^2 + b^5*f*p^3*q^3*log(c)^2 +
2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3 + 2*(b^5*f*p^4*q^5*log(d) + b^
5*f*p^4*q^4*log(c) + a*b^4*f*p^4*q^4)*log(f*x + e) + 2*(b^5*f*p^3*q^4*log(c
) + a*b^4*f*p^3*q^4)*log(d))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b \log \left(c \left(d \left(e + f x\right)^{p}\right)^{q}\right)\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-3), x)
```

Giac [B] time = 1.49323, size = 4699, normalized size = 27.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] -1/2*(f*x + e)*b^2*p^2*q^2*log(f*x + e)/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b
^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^
5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log
(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*
p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + 1/2*b^2*p^2*q^2*Ei(log(d)/p + log(c)/
(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)^2/((b^5*f*p^5
*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4
*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x +
 e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^
3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^
(1/p)) - 1/2*(f*x + e)*b^2*p^2*q^2/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*
p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p
^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*l
og(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q
^3*log(c) + a^2*b^3*f*p^3*q^3) - 1/2*(f*x + e)*b^2*p*q^2*log(d)/(b^5*f*p^5*
q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*
log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x +
e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3
*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + b^2*p*q^2*Ei(
log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x
+ e)*log(d)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*l
og(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*
b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*
log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*
p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e)*b^2*p*q*log(c)/(b^5*f*p^5*q^5
*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log
(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e)
+ 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^
4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3) + b^2*p*q*Ei(log(d
)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(f*x + e)*
log(c)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d)
 + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f
*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c
)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q
^3)*c^(1/(p*q))*d^(1/p)) + 1/2*b^2*q^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*
```

```
q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)^2/((b^5*f*p^5*q^5*log(f*x + e)^2 +
 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c)
+ b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4
*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^
4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) - 1/2*(f*x + e
)*a*b*p*q/(b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(
d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4
*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log
(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3
*q^3) + a*b*p*q*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-
a/(b*p*q))*log(f*x + e)/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*lo
g(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log
(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^
5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c)
+ a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + b^2*q*Ei(log(d)/p + log(c)/(p*q
) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)*log(d)/((b^5*f*p^5*q^5*
log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(
f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) +
 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4
*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)
) + 1/2*b^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b
*p*q))*log(c)^2/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x +
e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 +
2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*
q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^
3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + a*b*q*Ei(log(d)/p + log(c)/(p*q) + a/(b
*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(d)/((b^5*f*p^5*q^5*log(f*x + e)^2
+ 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c)
 + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^
4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b
^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p)) + a*b*Ei(log(
d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e))*e^(-a/(b*p*q))*log(c)/((b^5
*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x + e)*log(d) + 2*b^5*f*p
^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2 + 2*a*b^4*f*p^4*q^4*log
(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^3*q^3*log(c)^2 + 2*a*b^
4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*b^3*f*p^3*q^3)*c^(1/(p*
q))*d^(1/p)) + 1/2*a^2*Ei(log(d)/p + log(c)/(p*q) + a/(b*p*q) + log(f*x + e
))*e^(-a/(b*p*q))/((b^5*f*p^5*q^5*log(f*x + e)^2 + 2*b^5*f*p^4*q^5*log(f*x
+ e)*log(d) + 2*b^5*f*p^4*q^4*log(f*x + e)*log(c) + b^5*f*p^3*q^5*log(d)^2
+ 2*a*b^4*f*p^4*q^4*log(f*x + e) + 2*b^5*f*p^3*q^4*log(c)*log(d) + b^5*f*p^
3*q^3*log(c)^2 + 2*a*b^4*f*p^3*q^4*log(d) + 2*a*b^4*f*p^3*q^3*log(c) + a^2*
b^3*f*p^3*q^3)*c^(1/(p*q))*d^(1/p))
```

3.458 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi [A] time = 0.0653549, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]

[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Mathematica [A] time = 1.66756, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]

[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Maple [A] time = 0.655, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*f^2*h*p*q*x^2 + (e*f*g - e^2*h)*a + (e*f*g*p*q + (e*f*g - e^2*h)*lo
g(c) + (e*f*g - e^2*h)*log(d^q))*b + ((f^2*g - e*f*h)*a + (f^2*g*p*q + e*f*
h*p*q + (f^2*g - e*f*h)*log(c) + (f^2*g - e*f*h)*log(d^q))*b)*x + ((f^2*g -
 e*f*h)*b*x + (e*f*g - e^2*h)*b)*log(((f*x + e)^p)^q))/(a^2*b^2*f^2*g^2*p^2
*q^2 + 2*(f^2*g^2*p^2*q^2*log(c) + f^2*g^2*p^2*q^2*log(d^q))*a*b^3 + (f^2*g
^2*p^2*q^2*log(c)^2 + 2*f^2*g^2*p^2*q^2*log(c)*log(d^q) + f^2*g^2*p^2*q^2*l
og(d^q)^2)*b^4 + (a^2*b^2*f^2*h^2*p^2*q^2 + 2*(f^2*h^2*p^2*q^2*log(c) + f^2
*h^2*p^2*q^2*log(d^q))*a*b^3 + (f^2*h^2*p^2*q^2*log(c)^2 + 2*f^2*h^2*p^2*q^
2*log(c)*log(d^q) + f^2*h^2*p^2*q^2*log(d^q)^2)*b^4)*x^2 + (b^4*f^2*h^2*p^2
*q^2*x^2 + 2*b^4*f^2*g*h*p^2*q^2*x + b^4*f^2*g^2*p^2*q^2)*log(((f*x + e)^p)
^q)^2 + 2*(a^2*b^2*f^2*g*h*p^2*q^2 + 2*(f^2*g*h*p^2*q^2*log(c) + f^2*g*h*p^
2*q^2*log(d^q))*a*b^3 + (f^2*g*h*p^2*q^2*log(c)^2 + 2*f^2*g*h*p^2*q^2*log(c
)*log(d^q) + f^2*g*h*p^2*q^2*log(d^q)^2)*b^4)*x + 2*(a*b^3*f^2*g^2*p^2*q^2
+ (f^2*g^2*p^2*q^2*log(c) + f^2*g^2*p^2*q^2*log(d^q))*b^4 + (a*b^3*f^2*h^2*
p^2*q^2 + (f^2*h^2*p^2*q^2*log(c) + f^2*h^2*p^2*q^2*log(d^q))*b^4)*x^2 + 2*
(a*b^3*f^2*g*h*p^2*q^2 + (f^2*g*h*p^2*q^2*log(c) + f^2*g*h*p^2*q^2*log(d^q)
)*b^4)*x)*log(((f*x + e)^p)^q)) + integrate(1/2*(f^2*g^2 - 3*e*f*g*h + 2*e^
2*h^2 - (f^2*g*h - e*f*h^2)*x)/(a*b^2*f^2*g^3*p^2*q^2 + (f^2*g^3*p^2*q^2*lo
g(c) + f^2*g^3*p^2*q^2*log(d^q))*b^3 + (a*b^2*f^2*h^3*p^2*q^2 + (f^2*h^3*p^
2*q^2*log(c) + f^2*h^3*p^2*q^2*log(d^q))*b^3)*x^3 + 3*(a*b^2*f^2*g*h^2*p^2*
q^2 + (f^2*g*h^2*p^2*q^2*log(c) + f^2*g*h^2*p^2*q^2*log(d^q))*b^3)*x^2 + 3*
(a*b^2*f^2*g^2*h*p^2*q^2 + (f^2*g^2*h*p^2*q^2*log(c) + f^2*g^2*h*p^2*q^2*lo
g(d^q))*b^3)*x + (b^3*f^2*h^3*p^2*q^2*x^3 + 3*b^3*f^2*g*h^2*p^2*q^2*x^2 + 3
*b^3*f^2*g^2*h*p^2*q^2*x + b^3*f^2*g^3*p^2*q^2)*log(((f*x + e)^p)^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^3hx + a^3g + \left(b^3hx + b^3g\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\left(ab^2hx + ab^2g\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 3\left(a^2bhx + a^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*h*x + a^3*g + (b^3*h*x + b^3*g)*log(((f*x + e)^p*d)^q*c)^3
+ 3*(a*b^2*h*x + a*b^2*g)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*h*x + a^2*b
*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^3), x)
```

3.459 $\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi [A] time = 0.062645, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
```

```
[Out] Defer[Int][1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx=\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Mathematica [A] time = 38.8578, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3),x]
```

```
[Out] Integrate[1/((g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3), x]
```

Maple [A] time = 0.648, size = 0, normalized size = 0.

$$\int \frac{1}{\left(hx+g\right)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

```
[Out] int(1/(h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="maxima")
```

```
[Out] 1/2*((a*f^2*h - (f^2*h*p*q - f^2*h*log(c) - f^2*h*log(d^q))*b)*x^2 - (e*f*g
 - 2*e^2*h)*a - (e*f*g*p*q + (e*f*g - 2*e^2*h)*log(c) + (e*f*g - 2*e^2*h)*l
og(d^q))*b - ((f^2*g - 3*e*f*h)*a + (f^2*g*p*q + e*f*h*p*q + (f^2*g - 3*e*f
*h)*log(c) + (f^2*g - 3*e*f*h)*log(d^q))*b)*x + (b*f^2*h*x^2 - (f^2*g - 3*e
*f*h)*b*x - (e*f*g - 2*e^2*h)*b)*log(((f*x + e)^p)^q))/(a^2*b^2*f^2*g^3*p^2
*q^2 + 2*(f^2*g^3*p^2*q^2*log(c) + f^2*g^3*p^2*q^2*log(d^q))*a*b^3 + (f^2*g
^3*p^2*q^2*log(c)^2 + 2*f^2*g^3*p^2*q^2*log(c)*log(d^q) + f^2*g^3*p^2*q^2*l
og(d^q)^2)*b^4 + (a^2*b^2*f^2*h^3*p^2*q^2 + 2*(f^2*h^3*p^2*q^2*log(c) + f^2
*h^3*p^2*q^2*log(d^q))*a*b^3 + (f^2*h^3*p^2*q^2*log(c)^2 + 2*f^2*h^3*p^2*q^
2*log(c)*log(d^q) + f^2*h^3*p^2*q^2*log(d^q)^2)*b^4)*x^3 + 3*(a^2*b^2*f^2*g
*h^2*p^2*q^2 + 2*(f^2*g*h^2*p^2*q^2*log(c) + f^2*g*h^2*p^2*q^2*log(d^q))*a*
b^3 + (f^2*g*h^2*p^2*q^2*log(c)^2 + 2*f^2*g*h^2*p^2*q^2*log(c)*log(d^q) + f
^2*g*h^2*p^2*q^2*log(d^q)^2)*b^4)*x^2 + (b^4*f^2*h^3*p^2*q^2*x^3 + 3*b^4*f^
2*g*h^2*p^2*q^2*x^2 + 3*b^4*f^2*g^2*h*p^2*q^2*x + b^4*f^2*g^3*p^2*q^2)*log(
((f*x + e)^p)^q)^2 + 3*(a^2*b^2*f^2*g^2*h*p^2*q^2 + 2*(f^2*g^2*h*p^2*q^2*lo
g(c) + f^2*g^2*h*p^2*q^2*log(d^q))*a*b^3 + (f^2*g^2*h*p^2*q^2*log(c)^2 + 2*
f^2*g^2*h*p^2*q^2*log(c)*log(d^q) + f^2*g^2*h*p^2*q^2*log(d^q)^2)*b^4)*x +
2*(a*b^3*f^2*g^3*p^2*q^2 + (f^2*g^3*p^2*q^2*log(c) + f^2*g^3*p^2*q^2*log(d^
q))*b^4 + (a*b^3*f^2*h^3*p^2*q^2 + (f^2*h^3*p^2*q^2*log(c) + f^2*h^3*p^2*q^
2*log(d^q))*b^4)*x^3 + 3*(a*b^3*f^2*g*h^2*p^2*q^2 + (f^2*g*h^2*p^2*q^2*log(
c) + f^2*g*h^2*p^2*q^2*log(d^q))*b^4)*x^2 + 3*(a*b^3*f^2*g^2*h*p^2*q^2 + (f
^2*g^2*h*p^2*q^2*log(c) + f^2*g^2*h*p^2*q^2*log(d^q))*b^4)*x)*log(((f*x + e
)^p)^q)) + integrate(1/2*(f^2*h^2*x^2 + f^2*g^2 - 6*e*f*g*h + 6*e^2*h^2 - 2
*(2*f^2*g*h - 3*e*f*h^2)*x)/(a*b^2*f^2*g^4*p^2*q^2 + (a*b^2*f^2*h^4*p^2*q^2
 + (f^2*h^4*p^2*q^2*log(c) + f^2*h^4*p^2*q^2*log(d^q))*b^3)*x^4 + (f^2*g^4*
p^2*q^2*log(c) + f^2*g^4*p^2*q^2*log(d^q))*b^3 + 4*(a*b^2*f^2*g*h^3*p^2*q^2
 + (f^2*g*h^3*p^2*q^2*log(c) + f^2*g*h^3*p^2*q^2*log(d^q))*b^3)*x^3 + 6*(a*
b^2*f^2*g^2*h^2*p^2*q^2 + (f^2*g^2*h^2*p^2*q^2*log(c) + f^2*g^2*h^2*p^2*q^2
*log(d^q))*b^3)*x^2 + 4*(a*b^2*f^2*g^3*h*p^2*q^2 + (f^2*g^3*h*p^2*q^2*log(c
) + f^2*g^3*h*p^2*q^2*log(d^q))*b^3)*x + (b^3*f^2*h^4*p^2*q^2*x^4 + 4*b^3*f
^2*g*h^3*p^2*q^2*x^3 + 6*b^3*f^2*g^2*h^2*p^2*q^2*x^2 + 4*b^3*f^2*g^3*h*p^2*
q^2*x + b^3*f^2*g^4*p^2*q^2)*log(((f*x + e)^p)^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^3h^2x^2 + 2\,a^3ghx + a^3g^2 + \left(b^3h^2x^2 + 2\,b^3ghx + b^3g^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\left(ab^2h^2x^2 + 2\,ab^2ghx + ab^2g^2\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="fricas")
```

```
[Out] integral(1/(a^3*h^2*x^2 + 2*a^3*g*h*x + a^3*g^2 + (b^3*h^2*x^2 + 2*b^3*g*h*
x + b^3*g^2)*log(((f*x + e)^p*d)^q*c)^3 + 3*(a*b^2*h^2*x^2 + 2*a*b^2*g*h*x
+ a*b^2*g^2)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*h^2*x^2 + 2*a^2*b*g*h*x
+ a^2*b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^3,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^3), x)
```

3.460 $\int (g+hx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=488

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^3}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}(fg}{}$$

```
[Out] -(Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*
Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f^3*
(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*(f*g - e*h)*Sqrt[p]*Sqrt[Pi/2
]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(
2/(p*q))) - (Sqrt[b]*h^2*Sqrt[p]*Sqrt[Pi/3]*Sqrt[q]*(e + f*x)^3*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(6*E^(
(3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + ((f*g - e*h)^2*(e + f
*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h*(f*g - e*h)*(e + f*x)^2*
Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h^2*(e + f*x)^3*Sqrt[a + b*Log
[c*(d*(e + f*x)^p)^q]])/(3*f^3)
```

Rubi [A] time = 1.61476, antiderivative size = 488, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^3}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}(fg}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```


```
[Out] -(Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*
Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f^3*
(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*(f*g - e*h)*Sqrt[p]*Sqrt[Pi/2
]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(
2/(p*q))) - (Sqrt[b]*h^2*Sqrt[p]*Sqrt[Pi/3]*Sqrt[q]*(e + f*x)^3*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(6*E^(
(3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + ((f*g - e*h)^2*(e + f
*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h*(f*g - e*h)*(e + f*x)^2*
Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^3 + (h^2*(e + f*x)^3*Sqrt[a + b*Log
[c*(d*(e + f*x)^p)^q]])/(3*f^3)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int (g+hx)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{f^2}+\frac{2h(fg-eh)(e+fx)\sqrt{a}}{f}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int(e+fx)^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int x^2\sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq}, c\left(d\right.\right.$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h(fg-eh)(e+fx)^2\sqrt{a}}{f}$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h(fg-eh)(e+fx)^2\sqrt{a}}{f}$$

$$= \frac{(fg-eh)^2(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^3}+\frac{h(fg-eh)(e+fx)^2\sqrt{a}}{f}$$

$$= -\frac{\sqrt{b}e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{p}\sqrt{\pi}\sqrt{q}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c(d\right.}}{\sqrt{b}\sqrt{p}}\right.}{2f^3}$$

Mathematica [A] time = 0.676829, size = 458, normalized size = 0.94

$$\frac{(e+fx)\left(9\sqrt{2\pi}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{2a}{bpq}}(eh-fg)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-18\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}e^{-\frac{a}{bpq}}(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((e + f*x)*((-18*Sqrt[b]*(f*g - e*h)^2*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a
 + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (9*Sqrt[b]*h*(-(f*g) + e*h)*Sqrt[p]*Sqrt[
2*Pi]*Sqrt[q]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p
*q))) - (2*Sqrt[b]*h^2*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*(e + f*x)^2*Erfi[(Sqrt[3]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((3*a
)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) + 36*(f*g - e*h)^2*Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]] + 36*h*(f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]] + 12*h^2*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))
/(36*f^3)
```

Maple [F] time = 0.888, size = 0, normalized size = 0.

$$\int (hx+g)^2 \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^2 \sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\left(g+hx\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^2 \sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.461 $\int (g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=311

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\right.}{}$$

```
[Out] -(Sqrt[b]*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Lo
g[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f^2*(c
*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*Sqrt[p]*Sqrt[Pi/2]*Sqrt[q]*(e +
 f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p
]*Sqrt[q])])/(4*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + ((
f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^2 + (h*(e + f*
x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^2)
```

Rubi [A] time = 0.811227, antiderivative size = 311, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f^2}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}h\sqrt{p}\sqrt{q}(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -(Sqrt[b]*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Lo
g[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f^2*(c
*(d*(e + f*x)^p)^q)^(1/(p*q))) - (Sqrt[b]*h*Sqrt[p]*Sqrt[Pi/2]*Sqrt[q]*(e +
 f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p
]*Sqrt[q])])/(4*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + ((
f*g - e*h)*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f^2 + (h*(e + f*
x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^2)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
```

```
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int (g+hx)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}{f} + \frac{h(e+fx)\sqrt{a+b\log\left(\right.}}{f}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)^2\sqrt{a+b\log\left(\right.}}{2f^2}$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)^2\sqrt{a+b\log\left(\right.}}{2f^2}$$

$$= \frac{(fg-eh)(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f^2} + \frac{h(e+fx)^2\sqrt{a+b\log\left(\right.}}{2f^2}$$

$$= -\frac{\sqrt{b}e^{-\frac{a}{bpq}}(fg-eh)\sqrt{p}\sqrt{\pi}\sqrt{q}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(\right.\right.}}{\sqrt{b}\sqrt{}}\right.}{2f^2}$$

Mathematica [A] time = 0.389771, size = 298, normalized size = 0.96

$$-\frac{(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(4\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+\sqrt{2\pi}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -((e + f*x)*(4*Sqrt[b]*E^(a/(b*p*q))*(f*g - e*h)*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(S
qrt[b]*Sqrt[p]*Sqrt[q])] + Sqrt[b]*h*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*(e + f*x)*E
rfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q]
)] - 4*E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(2*f*g - e*h + f*h
*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))/(8*E^((2*a)/(b*p*q))*f^2*(c*(d*(
e + f*x)^p)^q)^(2/(p*q)))
```

Maple [F] time = 0.27, size = 0, normalized size = 0.

$$\int \left(hx+g\right)\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\left(g+hx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.462 $\int \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=139

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f}$$

```
[Out] -(Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f*(c*(d*(e + f*x)^
p)^q)^(1/(p*q))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f
```

Rubi [A] time = 0.222615, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f}-\frac{\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] -(Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(2*E^(a/(b*p*q))*f*(c*(d*(e + f*x)^
p)^q)^(1/(p*q))) + ((e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] && !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \text{Subst}\left(\int \sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \sqrt{a+b\log\left(cd^qx^{pq}\right)}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x,\right.}{2f}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{\left(b(e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subs}}{2}\right.$$

$$= \frac{(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{f} - \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}}{}\right.$$

$$= -\frac{\sqrt{b}e^{-\frac{a}{bpq}}\sqrt{p}\sqrt{\pi}\sqrt{q}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{2f} + \frac{(e+f}{}$$

Mathematica [A] time = 0.0628417, size = 134, normalized size = 0.96

$$\frac{(e+fx)\left(2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)} - \sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((e + f*x)*(-((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p
)^q)^(1/(p*q)))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]))/(2*f)
```

Maple [F] time = 0.258, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.463 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx},x\right)$$

```
[Out] Unintegrable[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

Rubi [A] time = 0.0955348, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x),x]

[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx = \int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Mathematica [A] time = 1.21513, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x),x]

[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x), x]
```

Maple [A] time = 0.627, size = 0, normalized size = 0.

$$\int \frac{1}{hx+g}\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g),x, algorithm="giac")

[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

3.464 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2},x\right)$$

```
[Out] Unintegrable[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

Rubi [A] time = 0.148975, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2,x]
```

```
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx=\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Mathematica [A] time = 0.367075, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2,x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^2, x]
```

Maple [A] time = 0.65, size = 0, normalized size = 0.

$$\int \frac{1}{\left(hx+g\right)^2}\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^2, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\left(g+hx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**2,x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x)**2, x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^2, x)
```

3.465 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$

Optimal. Leaf size=625

$$\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{8f^3}+\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e}{}$$

```
[Out] (3*b^(3/2)*(f*g - e*h)^2*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b
*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*(f*g - e*h)*p^(3/2)*Sqrt[P
i/2]*q^(3/2)*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(8*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) + (b^(3/2)*h^2*p^(3/2)*Sqrt[Pi/3]*q^(3/2)*(e + f*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(12
*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (3*b*(f*g - e*h)^
2*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^3) - (3*b*h*(f*g
 - e*h)*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(4*f^3) - (b*
h^2*p*q*(e + f*x)^3*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(6*f^3) + ((f*g -
 e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h*(f*g - e
*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h^2*(e + f*x
)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(3*f^3)
```

Rubi [A] time = 1.91605, antiderivative size = 625, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{8f^3}+\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```


```
[Out] (3*b^(3/2)*(f*g - e*h)^2*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b
*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*(f*g - e*h)*p^(3/2)*Sqrt[P
i/2]*q^(3/2)*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(8*E^((2*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) + (b^(3/2)*h^2*p^(3/2)*Sqrt[Pi/3]*q^(3/2)*(e + f*x)^3*Erfi[(Sq
rt[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(12
*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (3*b*(f*g - e*h)^
2*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f^3) - (3*b*h*(f*g
 - e*h)*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(4*f^3) - (b*
h^2*p*q*(e + f*x)^3*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(6*f^3) + ((f*g -
 e*h)^2*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h*(f*g - e
*h)*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^3 + (h^2*(e + f*x
)^3*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(3*f^3)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
```

```
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx = \text{Subst}\left(\int (g+hx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2} dx, cd^q(e+fx)^{pq}, c\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}{f^2} + \frac{2h(fg-eh)(e\right.\right.$$

$$= \text{Subst}\left(\frac{h^2 \int (e+fx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2} dx}{f^2}, cd^q(e+fx)^{pq}\right.$$

$$= \text{Subst}\left(\frac{h^2 \,\text{Subst}\left(\int x^2 \left(a+b\log\left(cd^qx^{pq}\right)\right)^{3/2} dx, x, e+fx\right)}{f^3}, cd^q(e+\right.$$

$$= \frac{(fg-eh)^2(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f^3} + \frac{h(fg-eh)(e+}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3} - \frac{3bh(fg-eh}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3} - \frac{3bh(fg-eh}{}$$

$$= -\frac{3b(fg-eh)^2pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^3} - \frac{3bh(fg-eh}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)^2p^{3/2}\sqrt{\pi}q^{3/2}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}} \text{erfi}\left(\frac{\sqrt{a-}}{}\right.}{4f^3}$$

Mathematica [A] time = 1.39132, size = 545, normalized size = 0.87

$$\frac{(e+fx)\left(108bpq(fg-eh)^2\left(\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}} \text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right) - 2\sqrt{a+b\log\left(c\left(d(e+\right.\right.}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*(144*(f*g - e*h)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 144*
h*(f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 48*h^2*(e
+ f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 4*b*h^2*p*q*(e + f*x)^2*(
(Sqrt[b]*Sqrt[p]*Sqrt[3*Pi]*Sqrt[q]*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e +
f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^((3*a)/(b*p*q))*(c*(d*(e + f*x)
^p)^q)^(3/(p*q))) - 6*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]) + 27*b*h*(f*g -
 e*h)*p*q*(e + f*x)*((Sqrt[b]*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*Erfi[(Sqrt[2]*Sqrt
```

```
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^((2*a)/(b*
p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - 4*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]]) + 108*b*(f*g - e*h)^2*p*q*((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqr
t[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q)
)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) - 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)))/(144*f^3)
```

Maple [F] time = 0.487, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^{2} \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(hx+g\right)^{2}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^2 \left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

3.466 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx$

Optimal. Leaf size=396

$$\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}\left(\right.}{}$$

```
[Out] (3*b^(3/2)*(f*g - e*h)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(4*E^(a/(b*p*q))*f^2*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*p^(3/2)*Sqrt[Pi/2]*q^(3/2)*(
e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqr
t[p]*Sqrt[q])]])/(16*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
- (3*b*(f*g - e*h)*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f
^2) - (3*b*h*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(8*f^2)
+ ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^2 + (h*(
e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(2*f^2)
```

Rubi [A] time = 1.01785, antiderivative size = 396, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2401, 2389, 2296, 2300, 2180, 2204, 2390, 2305, 2310, 2445}

$$\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f^2}+\frac{3\sqrt{\frac{\pi}{2}}b^{3/2}hp^{3/2}q^{3/2}(e+fx)^2e^{-\frac{2a}{bpq}}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*(f*g - e*h)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*L
og[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(4*E^(a/(b*p*q))*f^2*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (3*b^(3/2)*h*p^(3/2)*Sqrt[Pi/2]*q^(3/2)*(
e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqr
t[p]*Sqrt[q])]])/(16*E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
- (3*b*(f*g - e*h)*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(2*f
^2) - (3*b*h*p*q*(e + f*x)^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(8*f^2)
+ ((f*g - e*h)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f^2 + (h*(
e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/(2*f^2)
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx = \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \text{Subst}\left(\int \left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}{f} + \frac{h(e+fx)\left(a+b\log\right.}{}\right.\right.$$

$$= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^{3/2}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq},\right.$$

$$= \frac{(fg-eh)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f^2} + \frac{h(e+fx)^2\left(a+b\log\right.}{2}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bhpq(e+fx)^2\sqrt{}}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bhpq(e+fx)^2\sqrt{}}{}$$

$$= -\frac{3b(fg-eh)pq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f^2} - \frac{3bhpq(e+fx)^2\sqrt{}}{}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}(fg-eh)p^{3/2}\sqrt{\pi}q^{3/2}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log(}}{\sqrt{b}}\right.}{4f^2}$$

Mathematica [A] time = 0.566567, size = 348, normalized size = 0.88

$$\frac{(e+fx)\left(24bpq(fg-eh)\left(\sqrt{\pi}\sqrt{b}\sqrt{p}\sqrt{q}e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)-2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right.\right.}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*(32*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 16*h*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 3*b*h*p*q*(e + f*x)*((Sqrt
[b]*Sqrt[p]*Sqrt[2*Pi]*Sqrt[q]*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^
p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))) - 4*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]) + 24*b*(f*g - e*h)*p
*q*((Sqrt[b]*Sqrt[p]*Sqrt[Pi]*Sqrt[q]*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p
*q))) - 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])))/(32*f^2)
```

Maple [F] time = 0.272, size = 0, normalized size = 0.

$$\int \left(hx+g\right)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

3.467 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx$

Optimal. Leaf size=176

$$\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f}$$

```
[Out] (3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (3*b*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f
```

Rubi [A] time = 0.269585, antiderivative size = 176, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2296, 2300, 2180, 2204, 2445}

$$\frac{3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f}+\frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e +
 f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(4*E^(a/(b*p*q))*f*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (3*b*p*q*(e + f*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
)/(2*f) + ((e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))/f
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
```

```
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}\,dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^qx^{pq}\right)\right)^{3/2}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)\right.\right.$$

$$= \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{f} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \sqrt{a+b\log\left(c\right.}\right.}{2f}\right.$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{f}$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{f}$$

$$= -\frac{3bpq(e+fx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{2f} + \frac{(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{f}$$

$$= \frac{3b^{3/2}e^{-\frac{a}{bpq}}p^{3/2}\sqrt{\pi}q^{3/2}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\,\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{4f} - \frac{3b}{}$$

Mathematica [A] time = 0.202754, size = 160, normalized size = 0.91

$$\frac{(e+fx)\left(3\sqrt{\pi}b^{3/2}p^{3/2}q^{3/2}e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\,\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\left(2a+2b\log\right.\right.}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] ((e + f*x)*((3*b^(3/2)*p^(3/2)*Sqrt[Pi]*q^(3/2)*Erfi[Sqrt[a + b*Log[c*(d*(e
 + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))) + 2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]*(2*a - 3*b*p*q + 2
*b*Log[c*(d*(e + f*x)^p)^q])))/(4*f)
```

Maple [F] time = 0.258, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

3.468 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]
```

Rubi [A] time = 0.115563, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x),x]

[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx=\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$$

Mathematica [A] time = 1.9484, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x),x]

[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x), x]
```

Maple [A] time = 0.654, size = 0, normalized size = 0.

$$\int \frac{1}{hx+g}\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2)/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g), x)
```

3.469 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

Rubi [A] time = 0.163067, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2,x]

[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx = \int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Mathematica [A] time = 2.1816, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2,x]

[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)/(g + h*x)^2, x]
```

Maple [A] time = 0.635, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^2}\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="maxima
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g)^2, x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2)/(h*x+g)**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}{\left(hx+g\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(3/2)/(h*x+g)^2,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)/(h*x + g)^2, x)
```

3.470 $\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=355

$$\frac{\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^3\sqrt{p}\sqrt{q}}+\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+\right.\right.}{\sqrt{b}f^3}$$

```
[Out] ((f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*Erfi[
(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/
(Sqrt[b]*E^((2*a)/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))) + (h^2*Sqrt[Pi/3]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e + f
*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((3*a)/(b*p*q))*f^3*Sqrt
[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rubi [A] time = 1.30725, antiderivative size = 355, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^3\sqrt{p}\sqrt{q}}+\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+\right.\right.}{\sqrt{b}f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*Erfi[
(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/
(Sqrt[b]*E^((2*a)/(b*p*q))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*
q))) + (h^2*Sqrt[Pi/3]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*(e + f
*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((3*a)/(b*p*q))*f^3*Sqrt
[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{2h(fg-eh)(e+fx)}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{}{f^2}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{(e+fx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) + \text{Subst}\left(\frac{(2h}{}\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int\frac{x^2}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int\frac{e^{\frac{3x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^q(e+fx)^p\right.\right.}{f^3pq}\right.$$

$$= \text{Subst}\left(\frac{\left(2h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int e^{-\frac{3a}{bpq}+\frac{3x^2}{bpq}}\,dx, x, \sqrt{a+b\log\left(\right.}\right.}{bf^3pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^3\sqrt{p}\sqrt{q}} + \frac{e^{-\frac{3}{b}}}{}$$

Mathematica [A] time = 0.331705, size = 315, normalized size = 0.89

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(3\sqrt{2}h(e+fx)e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+3\right.}{3\sqrt{b}f^3\sqrt{p}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*(3*E^((2*a)/(b*p*q))*(f*g - e*h)^2*(c*(d*(e + f*x)^p)^q
)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt
[q])] + 3*Sqrt[2]*E^(a/(b*p*q))*h*(f*g - e*h)*(e + f*x)*(c*(d*(e + f*x)^p)^
q)^(1/(p*q))*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*S
qrt[p]*Sqrt[q])] + Sqrt[3]*h^2*(e + f*x)^2*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(
d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(3*Sqrt[b]*E^((3*a)/(b*p*q
))*f^3*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(3/(p*q)))
```

Maple [F] time = 0.491, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^2\frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral((g + h*x)**2/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.471 $\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=229

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}+\frac{\sqrt{\frac{\pi}{2}}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\ldots\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}$$

```
[Out] ((f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(
Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d
*(e + f*x)^p)^q)^(1/(p*q))) + (h*Sqrt[Pi/2]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((2
*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rubi [A] time = 0.665704, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}+\frac{\sqrt{\frac{\pi}{2}}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\ldots\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] ((f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(
Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d
*(e + f*x)^p)^q)^(1/(p*q))) + (h*Sqrt[Pi/2]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(Sqrt[b]*E^((2
*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{fg-eh}{f\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{h(e+fx)}{f\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\right) dx, cd^q(e+\right.$$

$$= \text{Subst}\left(\frac{h\int \frac{e+fx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) + \text{Subst}\left(\frac{(fg-e}{}\right.$$

$$= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) + \text{S}$$

$$= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{2x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^q(e+fx)^{pq}\right)\right)}{f^2pq},\right.$$

$$= \text{Subst}\left(\frac{\left(2h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int e^{-\frac{2a}{bpq}+\frac{2x^2}{bpq}}\,dx, x, \sqrt{a+b\log\left(cd^q(\right.}\right.}{bf^2pq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f^2\sqrt{p}\sqrt{q}} + \frac{e^{-\frac{2a}{bpq}}h\sqrt{}}{}$$

Mathematica [A] time = 0.180538, size = 208, normalized size = 0.91

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(2e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)+\sqrt{2}h(e+fx)\text{Erfi}\left(\frac{\sqrt{}}{}\right.\right.}{2\sqrt{b}f^2\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*(2*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^(1/(
p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]
+ Sqrt[2]*h*(e + f*x)*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
Sqrt[b]*Sqrt[p]*Sqrt[q])]))/(2*Sqrt[b]*E^((2*a)/(b*p*q))*f^2*Sqrt[p]*Sqrt[q
]*(c*(d*(e + f*x)^p)^q)^(2/(p*q)))
```

Maple [F] time = 0.267, size = 0, normalized size = 0.

$$\int (hx+g)\frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{g+hx}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral((g + h*x)/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")

[Out] integrate((h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.472 $\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=104

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f\sqrt{p}\sqrt{q}}$$

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```

Rubi [A] time = 0.1795, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {2389, 2300, 2180, 2204, 2445}

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```


```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \text{Subst}\left(\int \frac{1}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int \frac{e^{\frac{x}{pq}}}{\sqrt{a+bx}}\,dx, x, \log\left(cd^q(e+fx)^{pq}\right)\right)}{fpq}, cd$$

$$= \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int e^{-\frac{a}{bpq}+\frac{x^2}{bpq}}\,dx, x, \sqrt{a+b\log\left(cd^q(e+\right.}\right.}{bfpq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f\sqrt{p}\sqrt{q}}$$

Mathematica [A] time = 0.0217066, size = 104, normalized size = 1.

$$\frac{\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{\sqrt{b}f\sqrt{p}\sqrt{q}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] (Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt
[p]*Sqrt[q])])/(Sqrt[b]*E^(a/(b*p*q))*f*Sqrt[p]*Sqrt[q]*(c*(d*(e + f*x)^p)^
q)^(1/(p*q)))
```

Maple [F] time = 0.269, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*log(c*(d*(e + f*x)**p)**q)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.473 $\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi [A] time = 0.104327, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Defer[Int][1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 0.111172, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Integrate[1/((g + h*x)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Maple [A] time = 0.678, size = 0, normalized size = 0.

$$\int \frac{1}{hx+g}\frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)}\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.474 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=404

$$\frac{4\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+\right.\right.}{b^{3/2}f^3p}$$

```
[Out] (2*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*E
rfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q]
)])/(b^(3/2)*E^((2*a)/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2
/(p*q))) + (2*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*
(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^((3*a)/(b*p*q))*f^
3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g + h*x)
^2)/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rubi [A] time = 2.24988, antiderivative size = 404, normalized size of antiderivative = 1., number of steps used = 26, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{4\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\text{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}}+\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d(e+\right.\right.}{b^{3/2}f^3p}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```


```
[Out] (2*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (4*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^2*E
rfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q]
)])/(b^(3/2)*E^((2*a)/(b*p*q))*f^3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2
/(p*q))) + (2*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[c*(d*
(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^((3*a)/(b*p*q))*f^
3*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g + h*x)
^2)/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{6\int \frac{(g+hx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{bpq}, cd^q(e+\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{6\int\left(\frac{(fg-eh)^2}{f^2\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{2h(}{f^2\sqrt{a+b}}\right.}{}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(6h^2\right)\int \frac{(e+fx)^2}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{bf^2pq}, cd^q(\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(6h^2\right)\text{Subst}\left(\int \frac{x^2}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x\right.}{bf^3pq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(6h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)}{}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(12h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)}{}\right.$$

$$= \frac{2e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^3p^{3/2}q^{3/2}} + \frac{4e^{-}}{}$$

Mathematica [B] time = 2.48928, size = 1040, normalized size = 2.57

$$\frac{2\left(e^{-\frac{3a}{bpq}}h^2\sqrt{3\pi}(e+fx)^3\text{Erfi}\left(\frac{\sqrt{3}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}} - 2ee^{-\frac{2a}{bpq}}h^2\sqrt{2\pi}(e\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(-(Sqrt[b]*e*f^2*g^2*Sqrt[p]*Sqrt[q]) - Sqrt[b]*f^3*g^2*Sqrt[p]*Sqrt[q]*
x - 2*Sqrt[b]*e*f^2*g*h*Sqrt[p]*Sqrt[q]*x - 2*Sqrt[b]*f^3*g*h*Sqrt[p]*Sqrt[
q]*x^2 - Sqrt[b]*e*f^2*h^2*Sqrt[p]*Sqrt[q]*x^2 - Sqrt[b]*f^3*h^2*Sqrt[p]*Sq
rt[q]*x^3 - (4*e*f*g*h*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x
)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(
```

```
E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (e^2*h^2*Sqrt[Pi]*(e + f*x
)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(
p*q))) + (2*f*g*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*
(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^
p)^q]])/(E^((2*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - (2*e*h^2*Sqrt
[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqr
t[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^((2*a)/(b*p
*q))*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) + (h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(S
qrt[3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqr
t[a + b*Log[c*(d*(e + f*x)^p)^q]])/(E^((3*a)/(b*p*q))*(c*(d*(e + f*x)^p)^q)
^(3/(p*q))) + (Sqrt[b]*f^2*g^2*Sqrt[p]*Sqrt[q]*(e + f*x)*Gamma[1/2, -((a +
b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q
])/(b*p*q))])/(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*Sqrt[b]*
e*f*g*h*Sqrt[p]*Sqrt[q]*(e + f*x)*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)
^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])/(E^(a/(b*
p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q)))))/(b^(3/2)*f^3*p^(3/2)*q^(3/2)*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Maple [F] time = 0.887, size = 0, normalized size = 0.

$$\int (hx+g)^2 \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{-\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((g + h*x)**2/(a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

3.475 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=275

$$\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}+\frac{2\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\cdots}}{b^{3/2}f^2p^{3/2}q^{3\cdots}}$$

```
[Out] (2*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*S
qrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E
^((2*a)/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - (2*
(e + f*x)*(g + h*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rubi [A] time = 1.01186, antiderivative size = 275, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 9, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.321, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}}+\frac{2\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\cdots}}{b^{3/2}f^2p^{3/2}q^{3\cdots}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))) + (2*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]*S
qrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(3/2)*E
^((2*a)/(b*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) - (2*
(e + f*x)*(g + h*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{4\int \frac{g+hx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{bpq}, cd^q(e\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{4\int\left(\frac{fg-eh}{f\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}} + \frac{}{f\sqrt{a}}\right.}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{(4h)\int \frac{e+fx}{\sqrt{a+b\log\left(cd^q(e+fx)^{pq}\right)}}\,dx}{bfpq}, c\right.$$

$$= -\frac{2(e+fx)(g+hx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{(4h)\,\text{Subst}\left(\int \frac{x}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx\right.}{bf^2pq}\right.$$

$$= -\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}} -$$

$$= -\frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}} -$$

$$= \frac{2e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}f^2p^{3/2}q^{3/2}} + -$$

Mathematica [A] time = 1.34486, size = 435, normalized size = 1.58

$$\frac{2(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(\sqrt{b}\sqrt{p}\sqrt{q}e^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left((eh+fg)\sqrt{-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}}\text{Gamma}\left(\frac{1}{2}, -\frac{a+}{}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] (2*(e + f*x)*(-2*e*E^(a/(b*p*q))*h*Sqrt[Pi]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[
a + b*Log[c*(d*(e + f*x)^p)^q]] + h*Sqrt[2*Pi]*(e + f*x)*Erfi[(Sqrt[2]*Sqrt
```

```
[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*Sqrt[a + b*Log
[c*(d*(e + f*x)^p)^q]] + Sqrt[b]*E^(a/(b*p*q))*Sqrt[p]*Sqrt[q]*(c*(d*(e + f
*x)^p)^q)^(1/(p*q))*(-(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(g +
 h*x)) + (f*g + e*h)*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))
]*Sqrt[-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])))/(b^(3/2)*E^((2*a)/(b
*p*q))*f^2*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*Sqrt[a + b*Log[c
*(d*(e + f*x)^p)^q]])
```

Maple [F] time = 0.263, size = 0, normalized size = 0.

$$\int (hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)

[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")

[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")

[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((g + h*x)/(a + b*log(c*(d*(e + f*x)**p)**q))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{\left(b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

3.476 $\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}}-\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))) - (2*(e + f*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]])
```

Rubi [A] time = 0.247922, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{2\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}}-\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3/2),x]
```

```
[Out] (2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(b^(3/2)*E^(a/(b*p*q))*f*p^(3/2)*q^(3/2)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))) - (2*(e + f*x))/(b*f*p*q*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]])
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^qx^{pq}))^{3/2}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{\sqrt{a+b\log(cd^qx^{pq})}}\,dx, x, \right.}{bfpq}\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(2(e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)}{}\right.$$

$$= -\frac{2(e+fx)}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}} + \text{Subst}\left(\frac{\left(4(e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)}{}\right.$$

$$= \frac{2e^{-\frac{a}{bpq}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{3/2}fp^{3/2}q^{3/2}} - \frac{}{bfpq\sqrt{a-}}$$

Mathematica [A] time = 0.17295, size = 181, normalized size = 1.23

$$-\frac{2(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(e^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}} - \sqrt{-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}}\text{Gamma}\left(\frac{1}{2}, -\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right.\right.}{bfpq\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-3/2),x]
```

```
[Out] (-2*(e + f*x)*(E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q)) - Gamma[1/2, -
((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*Sqrt[-((a + b*Log[c*(d*(e + f*x
)^p)^q])/(b*p*q))]))/(b*E^(a/(b*p*q))*f*p*q*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])
```

Maple [F] time = 0.268, size = 0, normalized size = 0.

$$\int \left(a + b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-3/2), x)
```

3.477 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

Rubi [A] time = 0.122677, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Mathematica [A] time = 0.454745, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)), x]
```

Maple [A] time = 0.676, size = 0, normalized size = 0.

$$\int \frac{1}{hx+g}\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{\frac{3}{2}}\left(g+hx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))**(3/2)*(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")

[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)), x)
```

3.478 $\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=514

$$\frac{16\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d\cdots\right.\right.}{3b^5\cdots}$$

```
[Out] (4*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^3*p^(5/2)*q^(5/2)
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (16*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^
2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt
[q])])/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^
q)^(2/(p*q))) + (4*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[
c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(5/2)*E^((3*a)/(b*p*q
))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g +
 h*x)^2)/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)) + (8*(f*g - e*h
)*(e + f*x)*(g + h*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^
q]]) - (4*(e + f*x)*(g + h*x)^2)/(b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]])
```

Rubi [A] time = 3.85645, antiderivative size = 514, normalized size of antiderivative = 1., number of steps used = 42, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2445}

$$\frac{16\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}}+\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)^2\left(c\left(d\cdots\right.\right.}{3b^5\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (4*(f*g - e*h)^2*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q
]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^3*p^(5/2)*q^(5/2)
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (16*h*(f*g - e*h)*Sqrt[2*Pi]*(e + f*x)^
2*Erfi[(Sqrt[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt
[q])])/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^
q)^(2/(p*q))) + (4*h^2*Sqrt[3*Pi]*(e + f*x)^3*Erfi[(Sqrt[3]*Sqrt[a + b*Log[
c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(b^(5/2)*E^((3*a)/(b*p*q
))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))) - (2*(e + f*x)*(g +
 h*x)^2)/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2)) + (8*(f*g - e*h
)*(e + f*x)*(g + h*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^
q]]) - (4*(e + f*x)*(g + h*x)^2)/(b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]])
```

Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
```

```
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(g+hx)^2}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\int \frac{(g+hx)^2}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx}{bpq}\right.$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+hx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+hx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+hx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx\right.\right.}}$$

$$= -\frac{2(e+fx)(g+hx)^2}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{8(fg-eh)(e+fx)(g+hx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx\right.\right.}}$$

$$= \frac{8e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}} -$$

$$= \frac{8e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}} -$$

$$= \frac{4e^{-\frac{a}{bpq}}(fg-eh)^2\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^3p^{5/2}q^{5/2}} +$$

Mathematica [A] time = 6.59158, size = 652, normalized size = 1.27

$$-\frac{2(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(\sqrt{b}\sqrt{p}\sqrt{q}e^{\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{2}{pq}}\left(2bpq\left(2e^2h^2+6efgh+f^2g^2\right)\left(-\frac{a+b\log\left(c\left(d(e+fx\right.\right.}{bpq}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*e*E^((2*a)/(b*p*q))*h*(8*f*g + e*h)*Sqrt[Pi]*(c*(d*(e + f*
x)^p)^q)^(2/(p*q))*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[
p]*Sqrt[q])]*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2) + 8*E^(a/(b*p*q))*h*(-(
f*g) + e*h)*Sqrt[2*Pi]*(e + f*x)*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*Erfi[(Sqrt
[2]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^(3/2) - 6*h^2*Sqrt[3*Pi]*(e + f*x)^2*Erfi[(Sqrt[
3]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b*
Log[c*(d*(e + f*x)^p)^q])^(3/2) + Sqrt[b]*E^((2*a)/(b*p*q))*Sqrt[p]*Sqrt[q]
*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(2*b*(f^2*g^2 + 6*e*f*g*h + 2*e^2*h^2)*p*q
*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(-((a + b*Log[c*(d
*(e + f*x)^p)^q])/(b*p*q)))^(3/2) + E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(
1/(p*q))*(g + h*x)*(b*f*p*q*(g + h*x) + 2*a*(f*g + 2*e*h + 3*f*h*x) + 2*b*(
2*e*h + f*(g + 3*h*x))*Log[c*(d*(e + f*x)^p)^q]))))/(3*b^(5/2)*E^((3*a)/(b*
p*q))*f^3*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(3/(p*q))*(a + b*Log[c*(d*(
e + f*x)^p)^q])^(3/2))
```

Maple [F] time = 0.83, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^{2} \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int((h*x+g)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(hx+g\right)^{2}}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^2}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

3.479 $\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=380

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{8\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{E}}{3b^{5/2}f^2p^{5/2}q^{5/2}}$$

```
[Out] (4*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (8*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/
2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) -
 (2*(e + f*x)*(g + h*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
 + (4*(f*g - e*h)*(e + f*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]]) - (8*(e + f*x)*(g + h*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]])
```

Rubi [A] time = 1.59795, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {2400, 2401, 2389, 2300, 2180, 2204, 2390, 2310, 2297, 2445}

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}}+\frac{8\sqrt{2\pi}h(e+fx)^2e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\operatorname{E}}{3b^{5/2}f^2p^{5/2}q^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```


```
[Out] (4*(f*g - e*h)*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]
/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(
c*(d*(e + f*x)^p)^q)^(1/(p*q))) + (8*h*Sqrt[2*Pi]*(e + f*x)^2*Erfi[(Sqrt[2]
*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])])/(3*b^(5/
2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p)^q)^(2/(p*q))) -
 (2*(e + f*x)*(g + h*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
 + (4*(f*g - e*h)*(e + f*x))/(3*b^2*f^2*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*
x)^p)^q]]) - (8*(e + f*x)*(g + h*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(
e + f*x)^p)^q]])
```


Rule 2400

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((d + e*x)*(f + g*x)^q*(a + b*Log[c*(d + e
*x)^n])^(p + 1))/(b*e*n*(p + 1)), x] + (-Dist[(q + 1)/(b*n*(p + 1)), Int[(f
 + g*x)^q*(a + b*Log[c*(d + e*x)^n])^(p + 1), x], x] + Dist[(q*(e*f - d*g))
/(b*e*n*(p + 1)), Int[(f + g*x)^(q - 1)*(a + b*Log[c*(d + e*x)^n])^(p + 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0] && LtQ[
p, -1] && GtQ[q, 0]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{g+hx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{4\int \frac{g+hx}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{3/2}}\,dx}{3bpq}, cd\right.$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{8(e+fx)(g+hx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{4(fg-eh)(e+fx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{4(fg-eh)(e+fx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= -\frac{2(e+fx)(g+hx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \frac{4(fg-eh)(e+fx)}{3b^2f^2p^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= -\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{5/2}f^2p^{5/2}q^{5/2}} - \frac{}{3b}$$

$$= -\frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{b^{5/2}f^2p^{5/2}q^{5/2}} - \frac{}{3b}$$

$$= \frac{4e^{-\frac{a}{bpq}}(fg-eh)\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}f^2p^{5/2}q^{5/2}} + \frac{8e^{-}}{}$$

Mathematica [A] time = 2.30621, size = 491, normalized size = 1.29

$$-\frac{2(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(\sqrt{b}\sqrt{p}\sqrt{q}e^{\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{\frac{1}{pq}}\left(2bpq(3eh+fg)\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{3/2}\text{Gamma}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)/(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2),x]
```

```
[Out] (-2*(e + f*x)*(8*e*E^(a/(b*p*q))*h*Sqrt[Pi]*(c*(d*(e + f*x)^p)^q)^(1/(p*q))
*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a +
b*Log[c*(d*(e + f*x)^p)^q])^(3/2) - 4*h*Sqrt[2*Pi]*(e + f*x)*Erfi[(Sqrt[2]*
Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]])/(Sqrt[b]*Sqrt[p]*Sqrt[q])]*(a + b*Log
[c*(d*(e + f*x)^p)^q])^(3/2) + Sqrt[b]*E^(a/(b*p*q))*Sqrt[p]*Sqrt[q]*(c*(d*
(e + f*x)^p)^q)^(1/(p*q))*(2*b*(f*g + 3*e*h)*p*q*Gamma[1/2, -((a + b*Log[c*
(d*(e + f*x)^p)^q])/(b*p*q))]*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))
^(3/2) + E^(a/(b*p*q))*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(b*f*p*q*(g + h*x) +
 2*a*(f*g + e*h + 2*f*h*x) + 2*b*(e*h + f*(g + 2*h*x))*Log[c*(d*(e + f*x)^p
)^q]))))/(3*b^(5/2)*E^((2*a)/(b*p*q))*f^2*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)^p
)^q)^(2/(p*q))*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2))
```

Maple [F] time = 0.273, size = 0, normalized size = 0.

$$\int (hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int((h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{hx+g}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2), x)
```

3.480 $\displaystyle\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}}-\frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{}{3bfpq\,(a}$$

```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (2*(e + f*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]])
```

Rubi [A] time = 0.339287, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2389, 2297, 2300, 2180, 2204, 2445}

$$\frac{4\sqrt{\pi}(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\operatorname{Erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}}-\frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}-\frac{}{3bfpq\,(a}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-5/2),x]
```


```
[Out] (4*Sqrt[Pi]*(e + f*x)*Erfi[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(Sqrt[b]*Sq
rt[p]*Sqrt[q])])/(3*b^(5/2)*E^(a/(b*p*q))*f*p^(5/2)*q^(5/2)*(c*(d*(e + f*x)
^p)^q)^(1/(p*q))) - (2*(e + f*x))/(3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])^(3/2)) - (4*(e + f*x))/(3*b^2*f*p^2*q^2*Sqrt[a + b*Log[c*(d*(e + f*x)^p)
^q]])
```


Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2297

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Simp[(x*(a + b
*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[1/(b*n*(p + 1)), Int[(a + b*
Log[c*x^n])^(p + 1), x], x] /; FreeQ[{a, b, c, n}, x] && LtQ[p, -1] && Inte
gerQ[2*p]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2180

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :
> Dist[2/d, Subst[Int[F^(g*(e - (c*f)/d) + (f*g*x^2)/d), x], x, Sqrt[c + d*
x]], x] /; FreeQ[{F, c, d, e, f, g}, x] &&  !$UseGamma === True
```

Rule 2204

```
Int[(F_)^((a_.) + (b_.)*((c_.) + (d_.)*(x_))^2), x_Symbol] :> Simp[(F^a*Sqr
t[Pi]*Erfi[(c + d*x)*Rt[b*Log[F], 2]])/(2*d*Rt[b*Log[F], 2]), x] /; FreeQ[{
F, a, b, c, d}, x] && PosQ[b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx = \text{Subst}\left(\int \frac{1}{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^{5/2}}\,dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} + \text{Subst}\left(\frac{2\,\text{Subst}\left(\int \frac{1}{(a+b\log(cd^q x^{pq}))^{3/2}}\,dx\right.}{3bfpq}\right.$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= -\frac{2(e+fx)}{3bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}} - \frac{4(e+fx)}{3b^2fp^2q^2\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}$$

$$= \frac{4e^{-\frac{a}{bpq}}\sqrt{\pi}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\text{erfi}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{b}\sqrt{p}\sqrt{q}}\right)}{3b^{5/2}fp^{5/2}q^{5/2}} - \frac{}{3bfpq\left(a+b\right.}$$

Mathematica [A] time = 0.326462, size = 211, normalized size = 1.09

$$-\frac{2(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(2bpq\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{3/2}\text{Gamma}\left(\frac{1}{2},-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)+e^{\frac{a}{bpq}}\left(c\left(d(e+f\right.\right.\right.}{3b^2fp^2q^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^(-5/2),x]
```

```
[Out] (-2*(e + f*x)*(2*b*p*q*Gamma[1/2, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
))]*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^(3/2) + E^(a/(b*p*q))*(c*
(d*(e + f*x)^p)^q)^(1/(p*q))*(2*a + b*p*q + 2*b*Log[c*(d*(e + f*x)^p)^q])))
/(3*b^2*E^(a/(b*p*q))*f*p^2*q^2*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(a + b*Log[
c*(d*(e + f*x)^p)^q])^(3/2))
```

Maple [F] time = 0.273, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-5/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(-5/2), x)
```

3.481 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

Rubi [A] time = 0.13013, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Mathematica [A] time = 0.833841, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^(5/2)), x]
```

Maple [A] time = 0.68, size = 0, normalized size = 0.

$$\int \frac{1}{hx+g}\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(5/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^(5/2)), x)
```

3.482 $\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx$

Optimal. Leaf size=171

$$\frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h}-\frac{4bpq\sqrt{g+hx}(fg-eh)^2}{5f^2h}+\frac{4bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}-\frac{4bpq(g+$$

```
[Out] (-4*b*(f*g - e*h)^2*p*q*Sqrt[g + h*x])/(5*f^2*h) - (4*b*(f*g - e*h)*p*q*(g
+ h*x)^(3/2))/(15*f*h) - (4*b*p*q*(g + h*x)^(5/2))/(25*h) + (4*b*(f*g - e*h
)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(5*f^(5/2)*h)
 + (2*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*h)
```

Rubi [A] time = 0.33455, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 50, 63, 208, 2445}

$$\frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h}-\frac{4bpq\sqrt{g+hx}(fg-eh)^2}{5f^2h}+\frac{4bpq(fg-eh)^{5/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5f^{5/2}h}-\frac{4bpq(g+$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (-4*b*(f*g - e*h)^2*p*q*Sqrt[g + h*x])/(5*f^2*h) - (4*b*(f*g - e*h)*p*q*(g
+ h*x)^(3/2))/(15*f*h) - (4*b*p*q*(g + h*x)^(5/2))/(25*h) + (4*b*(f*g - e*h
)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(5*f^(5/2)*h)
 + (2*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*h)
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)^{3/2}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^{pq}, c\left(d(e \ldots\right.\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{(g+hx)^{5/2}}{e+fx}\,dx \ldots}{5h}\right.$$

$$= -\frac{4bpq(g+hx)^{5/2}}{25h} + \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h} - \text{Subst}\left(\ldots \right.$$

$$= -\frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq(g+hx)^{5/2}}{25h} + \frac{2(g+hx)^{5/2}\left(a+b\log\left(c \ldots\right.\right.}{5h}$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq(g+hx)^{5/2}}{25h} \ldots$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq(g+hx)^{5/2}}{25h} \ldots$$

$$= -\frac{4b(fg-eh)^2pq\sqrt{g+hx}}{5f^2h} - \frac{4b(fg-eh)pq(g+hx)^{3/2}}{15fh} - \frac{4bpq(g+hx)^{5/2}}{25h} \ldots$$

Mathematica [A] time = 0.37766, size = 153, normalized size = 0.89

$$\frac{2\left(\frac{1}{5}a(g+hx)^{5/2}+\frac{1}{5}b(g+hx)^{5/2}\log\left(c\left(d(e+fx)^p\right)^q\right)-\frac{2}{75}bpq\left(\frac{5(fg-eh)\left(\sqrt{f}\sqrt{g+hx}(-3eh+4fg+fhx)-3(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\right)}{f^{5/2}}+3 \ldots\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (2*((a*(g + h*x)^(5/2))/5 - (2*b*p*q*(3*(g + h*x)^(5/2) + (5*(f*g - e*h)*(S
qrt[f]*Sqrt[g + h*x]*(4*f*g - 3*e*h + f*h*x) - 3*(f*g - e*h)^(3/2)*ArcTanh[
(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]))/f^(5/2)))/75 + (b*(g + h*x)^(5/2
)*Log[c*(d*(e + f*x)^p)^q])/5))/h
```

Maple [F] time = 0.956, size = 0, normalized size = 0.

$$\int (hx+g)^{\frac{3}{2}} \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.76127, size = 1412, normalized size = 8.26

$$\left[\frac{2\left(15\left(bf^2g^2 - 2\,befgh + be^2h^2\right)pq\sqrt{\frac{fg-eh}{f}}\log\left(\frac{fhx+2\,fg-eh+2\,\sqrt{hx+g}f\sqrt{\frac{fg-eh}{f}}}{fx+e}\right) + \left(15\,af^2g^2 - 2\left(23\,bf^2g^2 - 35\,befgh + 15\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] [2/75*(15*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*sqrt((f*g - e*h)/f)*log
((f*h*x + 2*f*g - e*h + 2*sqrt(h*x + g)*f*sqrt((f*g - e*h)/f))/(f*x + e)) +
 (15*a*f^2*g^2 - 2*(23*b*f^2*g^2 - 35*b*e*f*g*h + 15*b*e^2*h^2)*p*q - 3*(2*
b*f^2*h^2*p*q - 5*a*f^2*h^2)*x^2 + 2*(15*a*f^2*g*h - (11*b*f^2*g*h - 5*b*e*
f*h^2)*p*q)*x + 15*(b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*p*q)*
log(f*x + e) + 15*(b*f^2*h^2*x^2 + 2*b*f^2*g*h*x + b*f^2*g^2)*log(c) + 15*(
b*f^2*h^2*q*x^2 + 2*b*f^2*g*h*q*x + b*f^2*g^2*q)*log(d))*sqrt(h*x + g))/(f^
2*h), 2/75*(30*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*sqrt(-(f*g - e*h)/
f)*arctan(-sqrt(h*x + g)*f*sqrt(-(f*g - e*h)/f)/(f*g - e*h)) + (15*a*f^2*g^
2 - 2*(23*b*f^2*g^2 - 35*b*e*f*g*h + 15*b*e^2*h^2)*p*q - 3*(2*b*f^2*h^2*p*q
 - 5*a*f^2*h^2)*x^2 + 2*(15*a*f^2*g*h - (11*b*f^2*g*h - 5*b*e*f*h^2)*p*q)*x
 + 15*(b*f^2*h^2*p*q*x^2 + 2*b*f^2*g*h*p*q*x + b*f^2*g^2*p*q)*log(f*x + e)
+ 15*(b*f^2*h^2*x^2 + 2*b*f^2*g*h*x + b*f^2*g^2)*log(c) + 15*(b*f^2*h^2*q*x
^2 + 2*b*f^2*g*h*q*x + b*f^2*g^2*q)*log(d))*sqrt(h*x + g))/(f^2*h)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.483 $\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx$

Optimal. Leaf size=139

$$\frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}+\frac{4bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}-\frac{4bpq\sqrt{g+hx}(fg-eh)}{3fh}-\frac{4bpq(g+}{9h}$$

```
[Out] (-4*b*(f*g - e*h)*p*q*Sqrt[g + h*x])/(3*f*h) - (4*b*p*q*(g + h*x)^(3/2))/(9
*h) + (4*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]])/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(3*h)
```

Rubi [A] time = 0.182752, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 50, 63, 208, 2445}

$$\frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h}+\frac{4bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3f^{3/2}h}-\frac{4bpq\sqrt{g+hx}(fg-eh)}{3fh}-\frac{4bpq(g+}{9h}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```


```
[Out] (-4*b*(f*g - e*h)*p*q*Sqrt[g + h*x])/(3*f*h) - (4*b*p*q*(g + h*x)^(3/2))/(9
*h) + (4*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]])/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(3*h)
```


Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int \sqrt{g+hx}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^{pq}, c\left(d(e+f\right.\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{(g+hx)^{3/2}}{e+fx}dx}{3h}, \right.$$

$$= -\frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h} - \text{Subst}\left(\frac{(2\right.$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(\right.\right.\right.}{3h}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(\right.\right.\right.}{3h}$$

$$= -\frac{4b(fg-eh)pq\sqrt{g+hx}}{3fh} - \frac{4bpq(g+hx)^{3/2}}{9h} + \frac{4b(fg-eh)^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}}{\sqrt{}}\right.}{3f^{3/2}h}$$

Mathematica [A] time = 0.183829, size = 124, normalized size = 0.89

$$\frac{2\left(\sqrt{f}\sqrt{g+hx}\left(3af(g+hx)+3bf(g+hx)\log\left(c\left(d(e+fx)^p\right)^q\right)-2bpq(-3eh+4fg+fhx)\right)+6bpq(fg-eh)^{3/2}\tanh^{-1}\left(\right.\right.}{9f^{3/2}h}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (2*(6*b*(f*g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*
h]] + Sqrt[f]*Sqrt[g + h*x]*(3*a*f*(g + h*x) - 2*b*p*q*(4*f*g - 3*e*h + f*h
*x) + 3*b*f*(g + h*x)*Log[c*(d*(e + f*x)^p)^q])))/(9*f^(3/2)*h)
```

Maple [F] time = 0.688, size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.64266, size = 844, normalized size = 6.07

$$\left[-\frac{2\left(3\left(bfg-beh\right)pq\sqrt{\frac{fg-eh}{f}}\log\left(\frac{fhx+2fg-eh-2\sqrt{hx+g}f\sqrt{\frac{fg-eh}{f}}}{fx+e}\right)-\left(3afg-2\left(4bfg-3beh\right)pq-\left(2bfhpq-3afh\right)x+3\cdots\right.\right.}{9fh}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] [-2/9*(3*(b*f*g - b*e*h)*p*q*sqrt((f*g - e*h)/f)*log((f*h*x + 2*f*g - e*h -
 2*sqrt(h*x + g)*f*sqrt((f*g - e*h)/f))/(f*x + e)) - (3*a*f*g - 2*(4*b*f*g
- 3*b*e*h)*p*q - (2*b*f*h*p*q - 3*a*f*h)*x + 3*(b*f*h*p*q*x + b*f*g*p*q)*lo
g(f*x + e) + 3*(b*f*h*x + b*f*g)*log(c) + 3*(b*f*h*q*x + b*f*g*q)*log(d))*s
qrt(h*x + g))/(f*h), 2/9*(6*(b*f*g - b*e*h)*p*q*sqrt(-(f*g - e*h)/f)*arctan
(-sqrt(h*x + g)*f*sqrt(-(f*g - e*h)/f)/(f*g - e*h)) + (3*a*f*g - 2*(4*b*f*g
 - 3*b*e*h)*p*q - (2*b*f*h*p*q - 3*a*f*h)*x + 3*(b*f*h*p*q*x + b*f*g*p*q)*l
og(f*x + e) + 3*(b*f*h*x + b*f*g)*log(c) + 3*(b*f*h*q*x + b*f*g*q)*log(d))*
sqrt(h*x + g))/(f*h)]
```

Sympy [A] time = 7.49032, size = 144, normalized size = 1.04

$$\frac{2\left(\frac{a(g+hx)^{\frac{3}{2}}}{3}+b\left(-\frac{2fpq\left(\frac{h(g+hx)^{\frac{3}{2}}}{3f}+\frac{\sqrt{g+hx}\left(-eh^2+fgh\right)}{f^2}+\frac{h(eh-fg)^2\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{eh-fg}{f}}}\right)}{f^3\sqrt{\frac{eh-fg}{f}}}\right)}{3h}+\frac{(g+hx)^{\frac{3}{2}}\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{3}\right)\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] 2*(a*(g + h*x)**(3/2)/3 + b*(-2*f*p*q*(h*(g + h*x)**(3/2)/(3*f) + sqrt(g +
h*x)*(-e*h**2 + f*g*h)/f**2 + h*(e*h - f*g)**2*atan(sqrt(g + h*x)/sqrt((e*h
 - f*g)/f))/(f**3*sqrt((e*h - f*g)/f)))/(3*h) + (g + h*x)**(3/2)*log(c*(d*(
e - f*g/h + f*(g + h*x)/h)**p)**q)/3))/h
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.484 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=103

$$\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{4bpq\sqrt{fg-eh}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}h}-\frac{4bpq\sqrt{g+hx}}{h}$$

```
[Out] (-4*b*p*q*Sqrt[g + h*x])/h + (4*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/h
```

Rubi [A] time = 0.136962, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 50, 63, 208, 2445}

$$\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{4bpq\sqrt{fg-eh}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}h}-\frac{4bpq\sqrt{g+hx}}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x],x]
```

```
[Out] (-4*b*p*q*Sqrt[g + h*x])/h + (4*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/h
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{\sqrt{g+hx}}{e+fx}\,dx}{h}, cd^q(e+fx)^{pq}, c$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left(\frac{(2b(fg-eh)pq)\int}{h}\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left(\frac{(4b(fg-eh)pq)\,\text{S}}{}\right.$$

$$= -\frac{4bpq\sqrt{g+hx}}{h} + \frac{4b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}h} + \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{h}$$

Mathematica [A] time = 0.289237, size = 89, normalized size = 0.86

$$\frac{2\left(\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)-2bpq\right)+\frac{2bpq\sqrt{fg-eh}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}}\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x],x]
```

```
[Out] (2*((2*b*Sqrt[f*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h
]])/Sqrt[f] + Sqrt[g + h*x]*(a - 2*b*p*q + b*Log[c*(d*(e + f*x)^p)^q])))/h
```

Maple [A] time = 0.335, size = 155, normalized size = 1.5

$$2\,\frac{\sqrt{hx+g}a}{h}+2\,\frac{b\sqrt{hx+g}}{h}\ln\left(c\left(d\left(\frac{f\left(hx+g\right)+eh-fg}{h}\right)^p\right)^q\right)-4\,\frac{bqp\sqrt{hx+g}}{h}+4\,\frac{bqpe}{\sqrt{\left(eh-fg\right)f}}\arctan\left(\frac{f\sqrt{hx+g}}{\sqrt{\left(eh-fg\right)f}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

```
[Out] 2/h*(h*x+g)^(1/2)*a+2/h*b*ln(c*(d*((f*(h*x+g)+e*h-f*g)/h)^p)^q)*(h*x+g)^(1/
2)-4*b*p*q*(h*x+g)^(1/2)/h+4*b*q*p/((e*h-f*g)*f)^(1/2)*arctan(f*(h*x+g)^(1/
2)/((e*h-f*g)*f)^(1/2))*e-4/h*b*q*p*f/((e*h-f*g)*f)^(1/2)*arctan(f*(h*x+g)^
(1/2)/((e*h-f*g)*f)^(1/2))*g
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.52207, size = 483, normalized size = 4.69

$$\left[\frac{2\left(bpq\sqrt{\frac{fg-eh}{f}}\log\left(\frac{fhx+2\,fg-eh+2\,\sqrt{hx+g}f\sqrt{\frac{fg-eh}{f}}}{fx+e}\right)+\left(bpq\log\left(fx+e\right)-2\,bpq+bq\log\left(d\right)+b\log\left(c\right)+a\right)\sqrt{hx+g}\right)}{h}, \frac{2\left(2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="fricas")
```

```
[Out] [2*(b*p*q*sqrt((f*g - e*h)/f)*log((f*h*x + 2*f*g - e*h + 2*sqrt(h*x + g)*f*
sqrt((f*g - e*h)/f))/(f*x + e)) + (b*p*q*log(f*x + e) - 2*b*p*q + b*q*log(d
) + b*log(c) + a)*sqrt(h*x + g))/h, 2*(2*b*p*q*sqrt(-(f*g - e*h)/f)*arctan(
-sqrt(h*x + g)*f*sqrt(-(f*g - e*h)/f)/(f*g - e*h)) + (b*p*q*log(f*x + e) -
2*b*p*q + b*q*log(d) + b*log(c) + a)*sqrt(h*x + g))/h]
```

Sympy [A] time = 25.1486, size = 347, normalized size = 3.37

$$\begin{cases} -\frac{\frac{2ag}{\sqrt{g+hx}}+2a\left(-\frac{g}{\sqrt{g+hx}}-\sqrt{g+hx}\right)+2bg\left(\frac{2fpq\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{\sqrt{\frac{f}{eh-fg}}(eh-fg)}+\frac{\log\left(c\left(d(e+fx)^{p}\right)^{q}\right)}{\sqrt{g+hx}}\right)+2b\left(-\frac{2fpq\left(-\frac{h\sqrt{g+hx}}{f}-\frac{h\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{f\sqrt{\frac{f}{eh-fg}}}\right)}{h}-g\left(\frac{2fpq\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{f}{eh-fg}}\sqrt{g+hx}}\right)}{\sqrt{\frac{f}{eh-fg}}(eh-fg)}\right.\right.}{h} \\ \frac{ax+b\left(-fpq\left(-\frac{e\left(\begin{cases}\frac{x}{e} & \text{for } f=0\\ \frac{\log(e+fx)}{f} & \text{otherwise}\end{cases}\right)}{f}+\frac{x}{f}\right)+x\log\left(c\left(d(e+fx)^{p}\right)^{q}\right)\right)}{\sqrt{g}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(1/2),x)
```

```
[Out] Piecewise((-(2*a*g/sqrt(g + h*x) + 2*a*(-g/sqrt(g + h*x) - sqrt(g + h*x)) +
 2*b*g*(2*f*p*q*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h*x)))/(sqrt(f/(e*h -
f*g))*(e*h - f*g)) + log(c*(d*(e + f*x)**p)**q)/sqrt(g + h*x)) + 2*b*(-2*f*
p*q*(-h*sqrt(g + h*x)/f - h*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h*x)))/(f*
sqrt(f/(e*h - f*g))))/h - g*(2*f*p*q*atan(1/(sqrt(f/(e*h - f*g))*sqrt(g + h
*x)))/(sqrt(f/(e*h - f*g))*(e*h - f*g)) + log(c*(d*(e - f*g/h + f*(g + h*x)
/h)**p)**q)/sqrt(g + h*x)) - sqrt(g + h*x)*log(c*(d*(e - f*g/h + f*(g + h*x
)/h)**p)**q)))/h, Ne(h, 0)), ((a*x + b*(-f*p*q*(-e*Piecewise((x/e, Eq(f, 0)
), (log(e + f*x)/f, True))/f + x/f) + x*log(c*(d*(e + f*x)**p)**q)))/sqrt(g
), True))
```

Giac [A] time = 1.25908, size = 173, normalized size = 1.68

$$-\frac{2\left(\left(2f\left(\frac{(fg-he)\arctan\left(\frac{\sqrt{hx+g}f}{\sqrt{-f^2g+fhe}}\right)}{\sqrt{-f^2g+fhe}f}+\frac{\sqrt{hx+g}}{f}\right)-\sqrt{hx+g}\log(fx+e)\right)bpq-\sqrt{hx+g}bq\log(d)-\sqrt{hx+g}b\log(c)-\sqrt{hx+g}\ldots}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] -2*((2*f*((f*g - h*e)*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f
^2*g + f*h*e)*f) + sqrt(h*x + g)/f) - sqrt(h*x + g)*log(f*x + e))*b*p*q - s
qrt(h*x + g)*b*q*log(d) - sqrt(h*x + g)*b*log(c) - sqrt(h*x + g)*a)/h
```

3.485 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=86

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}}-\frac{4b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}$$

```
[Out] (-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(h*Sqrt
[f*g - e*h]) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g + h*x])
```

Rubi [A] time = 0.126199, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2395, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}}-\frac{4b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(3/2),x]
```

```
[Out] (-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(h*Sqrt
[f*g - e*h]) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g + h*x])
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{3/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)\sqrt{g+hx}}\,dx}{h}, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bfpq)\,\text{Subst}\left(\int \frac{1}{e-\frac{fg}{h}+\frac{fx^2}{h}}\,dx, x, \sqrt{g+hx}\right)}{h^2}\right.$$

$$= -\frac{4b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g+hx}}$$

Mathematica [A] time = 0.157937, size = 84, normalized size = 0.98

$$\frac{-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{g+hx}} - \frac{4b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{fg-eh}}}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(3/2),x]
```

```
[Out] ((-4*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/Sqrt[f
*g - e*h] - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/Sqrt[g + h*x])/h
```

Maple [F] time = 0.737, size = 0, normalized size = 0.

$$\int (a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right))\left(hx+g\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.56311, size = 563, normalized size = 6.55

$$\left[\frac{2\left(\left(bhpqx+bgpq\right)\sqrt{\frac{f}{fg-eh}}\log\left(\frac{fhx+2\,fg-eh-2\left(fg-eh\right)\sqrt{hx+g}\sqrt{\frac{f}{fg-eh}}}{fx+e}\right)-\left(bpq\log\left(fx+e\right)+bq\log\left(d\right)+b\log\left(c\right)+a\right)\sqrt{hx+\cdots}\right)}{h^2x+gh}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="fricas")
```

```
[Out] [2*((b*h*p*q*x + b*g*p*q)*sqrt(f/(f*g - e*h))*log((f*h*x + 2*f*g - e*h - 2*
(f*g - e*h)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)))/(f*x + e)) - (b*p*q*log(f*x
+ e) + b*q*log(d) + b*log(c) + a)*sqrt(h*x + g))/(h^2*x + g*h), -2*(2*(b*h*
p*q*x + b*g*p*q)*sqrt(-f/(f*g - e*h))*arctan(-(f*g - e*h)*sqrt(h*x + g)*sqr
t(-f/(f*g - e*h))/(f*h*x + f*g)) + (b*p*q*log(f*x + e) + b*q*log(d) + b*log
(c) + a)*sqrt(h*x + g))/(h^2*x + g*h)]
```

Sympy [A] time = 44.145, size = 90, normalized size = 1.05

$$\frac{-\frac{2a}{\sqrt{g+hx}}+2b\left(\frac{2pq\operatorname{atan}\left(\frac{\sqrt{g+hx}}{\sqrt{\frac{h\left(e-\frac{fg}{h}\right)}{f}}}\right)}{\sqrt{\frac{h\left(e-\frac{fg}{h}\right)}{f}}}-\frac{\log\left(c\left(d\left(e-\frac{fg}{h}+\frac{f(g+hx)}{h}\right)^p\right)^q\right)}{\sqrt{g+hx}}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(3/2),x)
```

```
[Out] (-2*a/sqrt(g + h*x) + 2*b*(2*p*q*atan(sqrt(g + h*x)/sqrt(h*(e - f*g/h)/f))/
sqrt(h*(e - f*g/h)/f) - log(c*(d*(e - f*g/h + f*(g + h*x)/h)**p)**q)/sqrt(g
 + h*x)))/h
```

Giac [A] time = 1.25984, size = 134, normalized size = 1.56

$$\frac{4\,bfpq\arctan\left(\frac{\sqrt{hx+g}f}{\sqrt{-f^2g+fhe}}\right)}{\sqrt{-f^2g+fhe}h}-\frac{2\left(bpq\log\left(\left(hx+g\right)f-fg+he\right)-bpq\log\left(h\right)+bq\log\left(d\right)+b\log\left(c\right)+a\right)}{\sqrt{hx+g}h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(3/2),x, algorithm="giac")
```

```
[Out] 4*b*f*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/(sqrt(-f^2*g + f*h*e
)*h) - 2*(b*p*q*log((h*x + g)*f - f*g + h*e) - b*p*q*log(h) + b*q*log(d) +
b*log(c) + a)/(sqrt(h*x + g)*h)
```

3.486 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{5/2}}\,dx$

Optimal. Leaf size=120

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}+\frac{4bfpq}{3h\sqrt{g+hx}(fg-eh)}$$

```
[Out] (4*b*f*p*q)/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (4*b*f^(3/2)*p*q*ArcTanh[(Sqr
t[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*L
og[c*(d*(e + f*x)^p)^q]))/(3*h*(g + h*x)^(3/2))
```

Rubi [A] time = 0.159532, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 51, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}}-\frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}}+\frac{4bfpq}{3h\sqrt{g+hx}(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(5/2),x]
```

```
[Out] (4*b*f*p*q)/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (4*b*f^(3/2)*p*q*ArcTanh[(Sqr
t[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*L
og[c*(d*(e + f*x)^p)^q]))/(3*h*(g + h*x)^(3/2))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{5/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{3/2}}\,dx}{3h}, cd^q(e+fx)^{p}\right.$$

$$= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{\left(2bf^2pq\right)\int \frac{1}{(e+fx)}}{3h(fg-eh}\right.$$

$$= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{\left(4bf^2pq\right)\text{Subst}}{3h}\right.$$

$$= \frac{4bfpq}{3h(fg-eh)\sqrt{g+hx}} - \frac{4bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{3h(g+hx)^{3/2}}$$

Mathematica [C] time = 0.0988886, size = 91, normalized size = 0.76

$$\frac{2(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)-4bfpq(g+hx)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{f(g+hx)}{fg-eh}\right)}{3h(g+hx)^{3/2}(eh-fg)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(5/2),x]
```

```
[Out] (-4*b*f*p*q*(g + h*x)*Hypergeometric2F1[-1/2, 1, 1/2, (f*(g + h*x))/(f*g -
e*h)] + 2*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*h*(-(f*g) + e*h)
*(g + h*x)^(3/2))
```

Maple [F] time = 0.677, size = 0, normalized size = 0.

$$\int (a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right))\left(hx+g\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.68841, size = 1034, normalized size = 8.62

$$\Bigg[-\frac{2\Bigg(\big(bfh^2pqx^2+2\,bfghpqx+bfg^2pq\big)\sqrt{\frac{f}{fg-eh}}\log\Bigg(\frac{fhx+2\,fg-eh+2\,(fg-eh)\sqrt{hx+g}\sqrt{\frac{f}{fg-eh}}}{fx+e}\Bigg)-\big(2\,bfhpqx+2\,bfgpq-\big(bfg-bel}{3\,\big(fg^3h-eg^2h^2+\big(fgh^3-eh^4\big)x^2+2\,\big(fg^2h^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*((b*f*h^2*p*q*x^2 + 2*b*f*g*h*p*q*x + b*f*g^2*p*q)*sqrt(f/(f*g - e*h)
)*log((f*h*x + 2*f*g - e*h + 2*(f*g - e*h)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)
))/(f*x + e)) - (2*b*f*h*p*q*x + 2*b*f*g*p*q - (b*f*g - b*e*h)*p*q*log(f*x
+ e) - a*f*g + a*e*h - (b*f*g - b*e*h)*q*log(d) - (b*f*g - b*e*h)*log(c))*s
qrt(h*x + g))/(f*g^3*h - e*g^2*h^2 + (f*g*h^3 - e*h^4)*x^2 + 2*(f*g^2*h^2 -
 e*g*h^3)*x), -2/3*(2*(b*f*h^2*p*q*x^2 + 2*b*f*g*h*p*q*x + b*f*g^2*p*q)*sqr
t(-f/(f*g - e*h))*arctan(-(f*g - e*h)*sqrt(h*x + g)*sqrt(-f/(f*g - e*h))/(f
*h*x + f*g)) - (2*b*f*h*p*q*x + 2*b*f*g*p*q - (b*f*g - b*e*h)*p*q*log(f*x +
 e) - a*f*g + a*e*h - (b*f*g - b*e*h)*q*log(d) - (b*f*g - b*e*h)*log(c))*sq
rt(h*x + g))/(f*g^3*h - e*g^2*h^2 + (f*g*h^3 - e*h^4)*x^2 + 2*(f*g^2*h^2 -
e*g*h^3)*x)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(5/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 1.34433, size = 286, normalized size = 2.38

$$\frac{4\,bf^2hpq\arctan\left(\frac{\sqrt{hx+g}f}{\sqrt{-f^2g+fhe}}\right)}{3\left(fgh^2-h^3e\right)\sqrt{-f^2g+fhe}}-\frac{2\left(bfgpq\log\left(\left(hx+g\right)f-fg+he\right)-bhpqe\log\left(\left(hx+g\right)f-fg+he\right)-bfgpq\log\left(h\right.\right.}{3\left(\left(hx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*b*f^2*h*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/((f*g*h^2 - h^
3*e)*sqrt(-f^2*g + f*h*e)) - 2/3*(b*f*g*p*q*log((h*x + g)*f - f*g + h*e) -
b*h*p*q*e*log((h*x + g)*f - f*g + h*e) - b*f*g*p*q*log(h) + b*h*p*q*e*log(h
) - 2*(h*x + g)*b*f*p*q + b*f*g*q*log(d) - b*h*q*e*log(d) + b*f*g*log(c) -
b*h*e*log(c) + a*f*g - a*h*e)/((h*x + g)^(3/2)*f*g*h - (h*x + g)^(3/2)*h^2*
e)
```

3.487 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{7/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}}+\frac{4bf^2pq}{5h\sqrt{g+hx}(fg-eh)^2}-\frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}+\frac{4bfpq}{15h(g+hx)^{3/2}(fg-eh)}$$

```
[Out] (4*b*f*p*q)/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (4*b*f^2*p*q)/(5*h*(f*g -
e*h)^2*Sqrt[g + h*x]) - (4*b*f^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sq
rt[f*g - e*h]])/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(5*h*(g + h*x)^(5/2))
```

Rubi [A] time = 0.199417, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 51, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}}+\frac{4bf^2pq}{5h\sqrt{g+hx}(fg-eh)^2}-\frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}}+\frac{4bfpq}{15h(g+hx)^{3/2}(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2),x]
```

```
[Out] (4*b*f*p*q)/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (4*b*f^2*p*q)/(5*h*(f*g -
e*h)^2*Sqrt[g + h*x]) - (4*b*f^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sq
rt[f*g - e*h]])/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(5*h*(g + h*x)^(5/2))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{7/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{7/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{5/2}}\,dx}{5h}, cd^q(e+fx)^{\cdots}\right.$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(2bf^2pq)\int \frac{\cdots}{(e+\cdots}}{5h(fg\cdots}\right.$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}}$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h(g+hx)^{5/2}}$$

$$= \frac{4bfpq}{15h(fg-eh)(g+hx)^{3/2}} + \frac{4bf^2pq}{5h(fg-eh)^2\sqrt{g+hx}} - \frac{4bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{5h(fg-eh)^{5/2}} - \cdots$$

Mathematica [C] time = 0.0870892, size = 91, normalized size = 0.6

$$\frac{6(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 4bfpq(g+hx)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{f(g+hx)}{fg-eh}\right)}{15h(g+hx)^{5/2}(eh-fg)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(7/2),x]
```

```
[Out] (-4*b*f*p*q*(g + h*x)*Hypergeometric2F1[-3/2, 1, -1/2, (f*(g + h*x))/(f*g -
 e*h)] + 6*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*h*(-(f*g) + e*
h)*(g + h*x)^(5/2))
```

Maple [F] time = 0.711, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)\left(hx+g\right)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.85264, size = 1859, normalized size = 12.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="fricas")
```

```
[Out] [2/15*(3*(b*f^2*h^3*p*q*x^3 + 3*b*f^2*g*h^2*p*q*x^2 + 3*b*f^2*g^2*h*p*q*x +
 b*f^2*g^3*p*q)*sqrt(f/(f*g - e*h))*log((f*h*x + 2*f*g - e*h - 2*(f*g - e*h
)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)))/(f*x + e)) + (6*b*f^2*h^2*p*q*x^2 - 3*
a*f^2*g^2 + 6*a*e*f*g*h - 3*a*e^2*h^2 + 2*(7*b*f^2*g*h - b*e*f*h^2)*p*q*x -
 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*log(f*x + e) + 2*(4*b*f^2*g^2
- b*e*f*g*h)*p*q - 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*q*log(d) - 3*(b*
f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))*sqrt(h*x + g))/(f^2*g^5*h - 2*e*
f*g^4*h^2 + e^2*g^3*h^3 + (f^2*g^2*h^4 - 2*e*f*g*h^5 + e^2*h^6)*x^3 + 3*(f^
2*g^3*h^3 - 2*e*f*g^2*h^4 + e^2*g*h^5)*x^2 + 3*(f^2*g^4*h^2 - 2*e*f*g^3*h^3
 + e^2*g^2*h^4)*x), -2/15*(6*(b*f^2*h^3*p*q*x^3 + 3*b*f^2*g*h^2*p*q*x^2 + 3
*b*f^2*g^2*h*p*q*x + b*f^2*g^3*p*q)*sqrt(-f/(f*g - e*h))*arctan(-(f*g - e*h
)*sqrt(h*x + g)*sqrt(-f/(f*g - e*h))/(f*h*x + f*g)) - (6*b*f^2*h^2*p*q*x^2
- 3*a*f^2*g^2 + 6*a*e*f*g*h - 3*a*e^2*h^2 + 2*(7*b*f^2*g*h - b*e*f*h^2)*p*q
*x - 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*p*q*log(f*x + e) + 2*(4*b*f^2*
g^2 - b*e*f*g*h)*p*q - 3*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*q*log(d) - 3
*(b*f^2*g^2 - 2*b*e*f*g*h + b*e^2*h^2)*log(c))*sqrt(h*x + g))/(f^2*g^5*h -
2*e*f*g^4*h^2 + e^2*g^3*h^3 + (f^2*g^2*h^4 - 2*e*f*g*h^5 + e^2*h^6)*x^3 + 3
*(f^2*g^3*h^3 - 2*e*f*g^2*h^4 + e^2*g*h^5)*x^2 + 3*(f^2*g^4*h^2 - 2*e*f*g^3
*h^3 + e^2*g^2*h^4)*x)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(7/2),x)
```

```
[Out] Timed out
```

Giac [B] time = 1.42114, size = 510, normalized size = 3.36

$$\frac{4\,bf^3hpq\arctan\left(\frac{\sqrt{hx+g}f}{\sqrt{-f^2g+fhe}}\right)}{5\left(f^2g^2h^2-2\,fgh^3e+h^4e^2\right)\sqrt{-f^2g+fhe}}-\frac{2\left(3\,bf^2g^2pq\log\left(\left(hx+g\right)f-fg+he\right)-6\,bfghpqe\log\left(\left(hx+g\right)f-fg\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(7/2),x, algorithm="giac")
```

```
[Out] 4/5*b*f^3*h*p*q*arctan(sqrt(h*x + g)*f/sqrt(-f^2*g + f*h*e))/((f^2*g^2*h^2
- 2*f*g*h^3*e + h^4*e^2)*sqrt(-f^2*g + f*h*e)) - 2/15*(3*b*f^2*g^2*p*q*log(
(h*x + g)*f - f*g + h*e) - 6*b*f*g*h*p*q*e*log((h*x + g)*f - f*g + h*e) - 3
*b*f^2*g^2*p*q*log(h) + 6*b*f*g*h*p*q*e*log(h) - 6*(h*x + g)^2*b*f^2*p*q -
2*(h*x + g)*b*f^2*g*p*q + 2*(h*x + g)*b*f*h*p*q*e + 3*b*h^2*p*q*e^2*log((h*
x + g)*f - f*g + h*e) + 3*b*f^2*g^2*q*log(d) - 6*b*f*g*h*q*e*log(d) - 3*b*h
^2*p*q*e^2*log(h) + 3*b*f^2*g^2*log(c) - 6*b*f*g*h*e*log(c) + 3*b*h^2*q*e^2
*log(d) + 3*a*f^2*g^2 - 6*a*f*g*h*e + 3*b*h^2*e^2*log(c) + 3*a*h^2*e^2)/((h
*x + g)^(5/2)*f^2*g^2*h - 2*(h*x + g)^(5/2)*f*g*h^2*e + (h*x + g)^(5/2)*h^3
*e^2)
```

3.488 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{9/2}}\,dx$

Optimal. Leaf size=184

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}}+\frac{4bf^3pq}{7h\sqrt{g+hx}(fg-eh)^3}+\frac{4bf^2pq}{21h(g+hx)^{3/2}(fg-eh)^2}-\frac{4bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{7h(fg-eh)^{7/2}}+\frac{}{35h}$$

```
[Out] (4*b*f*p*q)/(35*h*(f*g - e*h)*(g + h*x)^(5/2)) + (4*b*f^2*p*q)/(21*h*(f*g -
 e*h)^2*(g + h*x)^(3/2)) + (4*b*f^3*p*q)/(7*h*(f*g - e*h)^3*Sqrt[g + h*x])
- (4*b*f^(7/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(7*h*(
f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(7*h*(g + h*x)^(7/
2))
```

Rubi [A] time = 0.277749, antiderivative size = 184, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2395, 51, 63, 208, 2445}

$$-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}}+\frac{4bf^3pq}{7h\sqrt{g+hx}(fg-eh)^3}+\frac{4bf^2pq}{21h(g+hx)^{3/2}(fg-eh)^2}-\frac{4bf^{7/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{7h(fg-eh)^{7/2}}+\frac{}{35h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(9/2),x]
```

```
[Out] (4*b*f*p*q)/(35*h*(f*g - e*h)*(g + h*x)^(5/2)) + (4*b*f^2*p*q)/(21*h*(f*g -
 e*h)^2*(g + h*x)^(3/2)) + (4*b*f^3*p*q)/(7*h*(f*g - e*h)^3*Sqrt[g + h*x])
- (4*b*f^(7/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(7*h*(
f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(7*h*(g + h*x)^(7/
2))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)^{9/2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)^{9/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(2bfpq)\int \frac{1}{(e+fx)(g+hx)^{7/2}}\,dx}{7h}, cd^q(e+fx)^{\dots}\right.$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(2bf^2pq)\int \dots}{7h(fg\dots}\right.$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^{q}\dots\right.\right.}{7h(g+hx)^{7/2}}\dots$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}} - \frac{2(\dots}{\dots}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}} - \frac{2(\dots}{\dots}$$

$$= \frac{4bfpq}{35h(fg-eh)(g+hx)^{5/2}} + \frac{4bf^2pq}{21h(fg-eh)^2(g+hx)^{3/2}} + \frac{4bf^3pq}{7h(fg-eh)^3\sqrt{g+hx}} - \frac{4b\dots}{\dots}$$

Mathematica [C] time = 0.102163, size = 91, normalized size = 0.49

$$\frac{10(fg-eh)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 4bfpq(g+hx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{f(g+hx)}{fg-eh}\right)}{35h(g+hx)^{7/2}(eh-fg)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x)^(9/2),x]
```

```
[Out] (-4*b*f*p*q*(g + h*x)*Hypergeometric2F1[-5/2, 1, -3/2, (f*(g + h*x))/(f*g -
 e*h)] + 10*(f*g - e*h)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(35*h*(-(f*g) + e
*h)*(g + h*x)^(7/2))
```

Maple [F] time = 0.713, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)\left(hx+g\right)^{-\frac{9}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.17595, size = 2865, normalized size = 15.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="fricas")
```

```
[Out] [-2/105*(15*(b*f^3*h^4*p*q*x^4 + 4*b*f^3*g*h^3*p*q*x^3 + 6*b*f^3*g^2*h^2*p*
q*x^2 + 4*b*f^3*g^3*h*p*q*x + b*f^3*g^4*p*q)*sqrt(f/(f*g - e*h))*log((f*h*x
 + 2*f*g - e*h + 2*(f*g - e*h)*sqrt(h*x + g)*sqrt(f/(f*g - e*h)))/(f*x + e)
) - (30*b*f^3*h^3*p*q*x^3 - 15*a*f^3*g^3 + 45*a*e*f^2*g^2*h - 45*a*e^2*f*g*
h^2 + 15*a*e^3*h^3 + 10*(10*b*f^3*g*h^2 - b*e*f^2*h^3)*p*q*x^2 + 2*(58*b*f^
3*g^2*h - 16*b*e*f^2*g*h^2 + 3*b*e^2*f*h^3)*p*q*x - 15*(b*f^3*g^3 - 3*b*e*f
^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*p*q*log(f*x + e) + 2*(23*b*f^3*g^3
- 11*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2)*p*q - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*h
 + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*q*log(d) - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*h
+ 3*b*e^2*f*g*h^2 - b*e^3*h^3)*log(c))*sqrt(h*x + g))/(f^3*g^7*h - 3*e*f^2*
g^6*h^2 + 3*e^2*f*g^5*h^3 - e^3*g^4*h^4 + (f^3*g^3*h^5 - 3*e*f^2*g^2*h^6 +
3*e^2*f*g*h^7 - e^3*h^8)*x^4 + 4*(f^3*g^4*h^4 - 3*e*f^2*g^3*h^5 + 3*e^2*f*g
^2*h^6 - e^3*g*h^7)*x^3 + 6*(f^3*g^5*h^3 - 3*e*f^2*g^4*h^4 + 3*e^2*f*g^3*h^
5 - e^3*g^2*h^6)*x^2 + 4*(f^3*g^6*h^2 - 3*e*f^2*g^5*h^3 + 3*e^2*f*g^4*h^4 -
 e^3*g^3*h^5)*x), -2/105*(30*(b*f^3*h^4*p*q*x^4 + 4*b*f^3*g*h^3*p*q*x^3 + 6
*b*f^3*g^2*h^2*p*q*x^2 + 4*b*f^3*g^3*h*p*q*x + b*f^3*g^4*p*q)*sqrt(-f/(f*g
- e*h))*arctan(-(f*g - e*h)*sqrt(h*x + g)*sqrt(-f/(f*g - e*h))/(f*h*x + f*g
)) - (30*b*f^3*h^3*p*q*x^3 - 15*a*f^3*g^3 + 45*a*e*f^2*g^2*h - 45*a*e^2*f*g
*h^2 + 15*a*e^3*h^3 + 10*(10*b*f^3*g*h^2 - b*e*f^2*h^3)*p*q*x^2 + 2*(58*b*f
^3*g^2*h - 16*b*e*f^2*g*h^2 + 3*b*e^2*f*h^3)*p*q*x - 15*(b*f^3*g^3 - 3*b*e*
f^2*g^2*h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*p*q*log(f*x + e) + 2*(23*b*f^3*g^3
 - 11*b*e*f^2*g^2*h + 3*b*e^2*f*g*h^2)*p*q - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*
h + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*q*log(d) - 15*(b*f^3*g^3 - 3*b*e*f^2*g^2*h
```

```
 + 3*b*e^2*f*g*h^2 - b*e^3*h^3)*log(c))*sqrt(h*x + g))/(f^3*g^7*h - 3*e*f^2
*g^6*h^2 + 3*e^2*f*g^5*h^3 - e^3*g^4*h^4 + (f^3*g^3*h^5 - 3*e*f^2*g^2*h^6 +
 3*e^2*f*g*h^7 - e^3*h^8)*x^4 + 4*(f^3*g^4*h^4 - 3*e*f^2*g^3*h^5 + 3*e^2*f*
g^2*h^6 - e^3*g*h^7)*x^3 + 6*(f^3*g^5*h^3 - 3*e*f^2*g^4*h^4 + 3*e^2*f*g^3*h
^5 - e^3*g^2*h^6)*x^2 + 4*(f^3*g^6*h^2 - 3*e*f^2*g^5*h^3 + 3*e^2*f*g^4*h^4
- e^3*g^3*h^5)*x)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\left(hx+g\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(9/2), x)
```

3.489 $\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=635

$$\frac{8b^2p^2q^2(fg-eh)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5f^{5/2}h}-\frac{8bpq\sqrt{g+hx}(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5f^2h}+\frac{8bpq(fg-eh)^{5/}}{}$$

```
[Out] (368*b^2*(f*g - e*h)^2*p^2*q^2*Sqrt[g + h*x])/(75*f^2*h) + (128*b^2*(f*g -
e*h)*p^2*q^2*(g + h*x)^(3/2))/(225*f*h) + (16*b^2*p^2*q^2*(g + h*x)^(5/2))/
(125*h) - (368*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x]
)/Sqrt[f*g - e*h]])/(75*f^(5/2)*h) - (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTa
nh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(5*f^(5/2)*h) - (8*b*(f*g -
e*h)^2*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^2*h) - (8*b
*(f*g - e*h)*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*f*h)
 - (8*b*p*q*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(25*h) + (8*b
*(f*g - e*h)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a
+ b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^(5/2)*h) + (2*(g + h*x)^(5/2)*(a + b*Lo
g[c*(d*(e + f*x)^p)^q])^2)/(5*h) + (16*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x
])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h) + (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*Poly
Log[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h)
```

Rubi [A] time = 4.34782, antiderivative size = 635, normalized size of antiderivative = 1., number of steps used = 29, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50, 2445}

$$\frac{8b^2p^2q^2(fg-eh)^{5/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5f^{5/2}h}-\frac{8bpq\sqrt{g+hx}(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5f^2h}+\frac{8bpq(fg-eh)^{5/}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```


```
[Out] (368*b^2*(f*g - e*h)^2*p^2*q^2*Sqrt[g + h*x])/(75*f^2*h) + (128*b^2*(f*g -
e*h)*p^2*q^2*(g + h*x)^(3/2))/(225*f*h) + (16*b^2*p^2*q^2*(g + h*x)^(5/2))/
(125*h) - (368*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x]
)/Sqrt[f*g - e*h]])/(75*f^(5/2)*h) - (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTa
nh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(5*f^(5/2)*h) - (8*b*(f*g -
e*h)^2*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^2*h) - (8*b
*(f*g - e*h)*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(15*f*h)
 - (8*b*p*q*(g + h*x)^(5/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(25*h) + (8*b
*(f*g - e*h)^(5/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a
+ b*Log[c*(d*(e + f*x)^p)^q]))/(5*f^(5/2)*h) + (2*(g + h*x)^(5/2)*(a + b*Lo
g[c*(d*(e + f*x)^p)^q])^2)/(5*h) + (16*b^2*(f*g - e*h)^(5/2)*p^2*q^2*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x
])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h) + (8*b^2*(f*g - e*h)^(5/2)*p^2*q^2*Poly
Log[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*f^(5/2)*h)
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int (g+hx)^{3/2}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}, c \ldots\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{(g+hx)\ldots}{\ldots}}{\ldots}\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \ldots\right.}{\ldots}\right.$$

$$= \frac{2(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \ldots\right.}{\ldots}\right.$$

$$= -\frac{8bpq(g+hx)^{5/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{25h} + \frac{2(g+hx)^{5/2}\left(a+b \ldots\right.}{\ldots}$$

$$= \frac{16b^2p^2q^2(g+hx)^{5/2}}{125h} - \frac{8b(fg-eh)pq(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+f \ldots\right.\right.\right.}{15fh}$$

$$= \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh} + \frac{16b^2p^2q^2(g+hx)^{5/2}}{125h} - \frac{8b(fg-eh)^2 \ldots}{\ldots}$$

$$= \frac{368b^2(fg-eh)^2p^2q^2\sqrt{g+hx}}{75f^2h} + \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh} + \frac{16 \ldots}{\ldots}$$

$$= \frac{368b^2(fg-eh)^2p^2q^2\sqrt{g+hx}}{75f^2h} + \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh} + \frac{16 \ldots}{\ldots}$$

$$= \frac{368b^2(fg-eh)^2p^2q^2\sqrt{g+hx}}{75f^2h} + \frac{128b^2(fg-eh)p^2q^2(g+hx)^{3/2}}{225fh} + \frac{16 \ldots}{\ldots}$$

Mathematica [C] time = 8.82927, size = 2450, normalized size = 3.86

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*b^2*g*p^2*q^2*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(3*h*(e + f*x)*Hypergeom
etricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] - 3*h*(e
 + f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h
)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*Sqrt[1 + (h
*(e + f*x))/(f*g - e*h)]*Log[e + f*x]^2 - e*h*Sqrt[1 + (h*(e + f*x))/(f*g -
 e*h)]*Log[e + f*x]^2 + h*(e + f*x)*Sqrt[1 + (h*(e + f*x))/(f*g - e*h)]*Log
[e + f*x]^2))/(3*f*h*Sqrt[1 + (h*(e + f*x))/(f*g - e*h)]) - (2*b^2*p^2*q^2*
Sqrt[(f*g - e*h + h*(e + f*x))/f]*(10*f*g*h*(e + f*x)*HypergeometricPFQ[{-3
/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] - 10*e*h^2*(e + f*x)
*HypergeometricPFQ[{-3/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)
] + 15*e*h^2*(e + f*x)*HypergeometricPFQ[{-1/2, 1, 1, 1}, {2, 2, 2}, (h*(e
+ f*x))/(-(f*g) + e*h)] - 4*f^2*g^2*Log[e + f*x] + 8*e*f*g*h*Log[e + f*x] -
 4*e^2*h^2*Log[e + f*x] + 4*f^2*g^2*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e
*h)]*Log[e + f*x] - 8*e*f*g*h*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*L
og[e + f*x] + 4*e^2*h^2*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*Log[e +
 f*x] + 8*f*g*h*(e + f*x)*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*Log[e
 + f*x] - 8*e*h^2*(e + f*x)*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*Log
[e + f*x] + 4*h^2*(e + f*x)^2*Sqrt[(f*g - e*h + h*(e + f*x))/(f*g - e*h)]*L
og[e + f*x] - 15*e*h^2*(e + f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h
*(e + f*x))/(-(f*g) + e*h)]*Log[e + f*x] - 2*f^2*g^2*Log[e + f*x]^2 - e*f*g
*h*Log[e + f*x]^2 + 3*e^2*h^2*Log[e + f*x]^2 + 2*f^2*g^2*Sqrt[(f*g - e*h +
h*(e + f*x))/(f*g - e*h)]*Log[e + f*x]^2 + e*f*g*h*Sqrt[(f*g - e*h + h*(e +
 f*x))/(f*g - e*h)]*Log[e + f*x]^2 - 3*e^2*h^2*Sqrt[(f*g - e*h + h*(e + f*x
))/(f*g - e*h)]*Log[e + f*x]^2 - f*g*h*(e + f*x)*Sqrt[(f*g - e*h + h*(e + f
*x))/(f*g - e*h)]*Log[e + f*x]^2 + 6*e*h^2*(e + f*x)*Sqrt[(f*g - e*h + h*(e
 + f*x))/(f*g - e*h)]*Log[e + f*x]^2 - 3*h^2*(e + f*x)^2*Sqrt[(f*g - e*h +
h*(e + f*x))/(f*g - e*h)]*Log[e + f*x]^2 + 10*h*(-(f*g) + e*h)*(e + f*x)*Hy
pergeometricPFQ[{-3/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]*(1 + Lo
g[e + f*x])))/(15*f^2*h*Sqrt[1 + (h*(e + f*x))/(f*g - e*h)]) + (4*b*g*p*q*(
(6*(f*g - e*h)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sq
rt[f*g - e*h]])/Sqrt[f] - Sqrt[(f*g - e*h + h*(e + f*x))/f]*(h*(e + f*x)*(2
 - 3*Log[e + f*x]) + (f*g - e*h)*(8 - 3*Log[e + f*x])))*(a + b*q*(-(p*Log[e
 + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x
)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]
))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]
))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*
(e + f*x)^p])])))/(9*f*h) - (4*b*p*q*(30*(f*g - e*h)^(3/2)*(2*f*g + 3*e*h)*
ArcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]] + Sqrt
[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(9*h^2*(e + f*x)^2*(2 - 5*Log[e + f*x
]) + (f*g - e*h)*(3*e*h*(-46 + 15*Log[e + f*x]) + 2*f*g*(-31 + 15*Log[e + f
*x])) + h*(e + f*x)*(f*g*(16 - 15*Log[e + f*x]) + 6*e*h*(-11 + 15*Log[e + f
*x]))))*(a + b*q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log
[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e +
 f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e +
 f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) +
Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])))/(225*f^(5/2)*h) + Sqrt[g + h*x
]*((2*g^2*(a + b*q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*L
og[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e
 + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e
 + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x])
+ Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])]))^2)/(5*h) + (4*g*x*(a + b*q*(-
```

```
(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*
(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e +
 f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e +
 f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])
)/Log[d*(e + f*x)^p])]))^2)/5 + (2*h*x^2*(a + b*q*(-(p*Log[e + f*x]) + Log[
d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*
(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f
*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)
^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])
)^2)/5)
```

Maple [F] time = 0.703, size = 0, normalized size = 0.

$$\int (hx+g)^{\frac{3}{2}} \left(a+b\ln \left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^(3/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^{2}hx+b^{2}g\right)\sqrt{hx+g}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\left(abhx+abg\right)\sqrt{hx+g}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\left(a^{2}hx+a^{2}g\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*h*x + b^2*g)*sqrt(h*x + g)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*
b*h*x + a*b*g)*sqrt(h*x + g)*log(((f*x + e)^p*d)^q*c) + (a^2*h*x + a^2*g)*s
qrt(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

3.490 $\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\,dx$

Optimal. Leaf size=547

$$\frac{8b^2p^2q^2(fg-eh)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3f^{3/2}h}+\frac{8bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^{3/2}h}-$$

```
[Out] (64*b^2*(f*g - e*h)*p^2*q^2*Sqrt[g + h*x])/(9*f*h) + (16*b^2*p^2*q^2*(g + h
*x)^(3/2))/(27*h) - (64*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(9*f^(3/2)*h) - (8*b^2*(f*g - e*h)^(3/2)*p^2*q
^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(3*f^(3/2)*h) - (8*b
*(f*g - e*h)*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*f*h) -
(8*b*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(9*h) + (8*b*(f*
g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/(3*h) + (16*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(S
qrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/S
qrt[f*g - e*h])])/(3*f^(3/2)*h) + (8*b^2*(f*g - e*h)^(3/2)*p^2*q^2*PolyLog[
2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*f^(3/2)*h)
```

Rubi [A] time = 2.98267, antiderivative size = 547, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50, 2445}

$$\frac{8b^2p^2q^2(fg-eh)^{3/2}\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3f^{3/2}h}+\frac{8bpq(fg-eh)^{3/2}\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3f^{3/2}h}-$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (64*b^2*(f*g - e*h)*p^2*q^2*Sqrt[g + h*x])/(9*f*h) + (16*b^2*p^2*q^2*(g + h
*x)^(3/2))/(27*h) - (64*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]])/(9*f^(3/2)*h) - (8*b^2*(f*g - e*h)^(3/2)*p^2*q
^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(3*f^(3/2)*h) - (8*b
*(f*g - e*h)*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(3*f*h) -
(8*b*p*q*(g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(9*h) + (8*b*(f*
g - e*h)^(3/2)*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(3*f^(3/2)*h) + (2*(g + h*x)^(3/2)*(a + b*Log[c*
(d*(e + f*x)^p)^q])^2)/(3*h) + (16*b^2*(f*g - e*h)^(3/2)*p^2*q^2*ArcTanh[(S
qrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/S
qrt[f*g - e*h])])/(3*f^(3/2)*h) + (8*b^2*(f*g - e*h)^(3/2)*p^2*q^2*PolyLog[
2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*f^(3/2)*h)
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
```

```
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 dx = \text{Subst}\left(\int \sqrt{g+hx}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{(g+hx)^{3/2}(a+}{}}{3h}\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{\left(\frac{fg-}{f}\right.}{}\right.}{}\right.$$

$$= \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \sqrt{\frac{f}{}}\right.}{}\right.$$

$$= -\frac{8bpq(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{9h} + \frac{2(g+hx)^{3/2}\left(a+b\log\left(c\right.\right.}{3h}$$

$$= \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-eh)pq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3fh}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-eh)pq\sqrt{g+h}}{}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{8b(fg-eh)pq\sqrt{g+h}}{}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{64b^2(fg-eh)^{3/2}p^2q^2}{9f^{3/}}$$

$$= \frac{64b^2(fg-eh)p^2q^2\sqrt{g+hx}}{9fh} + \frac{16b^2p^2q^2(g+hx)^{3/2}}{27h} - \frac{64b^2(fg-eh)^{3/2}p^2q^2}{9f^{3/}}$$

Mathematica [C] time = 2.12411, size = 365, normalized size = 0.67

$$2\left(\frac{3b^2p^2q^2\sqrt{g+hx}\left(3h(e+fx)\,{}_4F_3\left(-\frac{1}{2},1,1,1;2,2,2;\frac{h(e+fx)}{eh-fg}\right)+\log(e+fx)\left(\log(e+fx)\left(fhx\sqrt{\frac{f(g+hx)}{fg-eh}}+fg\left(\sqrt{\frac{f(g+hx)}{fg-eh}}-1\right)+eh\right)-3h(e+fx)\,{}_3F_2\left(-\frac{1}{2},1,1;2,2;\frac{h(e+fx)}{eh-fg}\right)\right)\right)}{f\sqrt{\frac{f(g+hx)}{fg-eh}}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] (2*((3*b^2*p^2*q^2*Sqrt[g + h*x]*(3*h*(e + f*x)*HypergeometricPFQ[{-1/2, 1,
 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + Log[e + f*x]*(-3*h*(e +
f*x)*HypergeometricPFQ[{-1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]
+ (e*h + f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*h)] + f*g*(-1 + Sqrt[(f*(g + h*x
))/(f*g - e*h)]))*Log[e + f*x])))/(f*Sqrt[(f*(g + h*x))/(f*g - e*h)]) - (2*
b*p*q*(6*(f*g - e*h)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]
 + Sqrt[f]*Sqrt[g + h*x]*(6*e*h - 2*f*(4*g + h*x) + 3*f*(g + h*x)*Log[e + f
*x]))*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q]))/f^(3/2) + 3*(
g + h*x)^(3/2)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2))/(9
*h)
```

Maple [F] time = 0.72, size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\sqrt{hx+g}b^{2}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\sqrt{hx+g}ab\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\sqrt{hx+g}a^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*b
*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

3.491 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=447

$$\frac{8b^2p^2q^2\sqrt{fg-eh}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{\sqrt{f}h}-\frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(\right.\right.\right.}{h}$$

```
[Out] (16*b^2*p^2*q^2*Sqrt[g + h*x])/h - (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[
(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) - (8*b^2*Sqrt[f*g - e
*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(Sqrt[f]*h)
 - (8*b*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (8*b*Sqrt[f
*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f
*x)^p)^q])^2)/h + (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g +
 h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])
])/(Sqrt[f]*h) + (8*b^2*Sqrt[f*g - e*h]*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt
[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(Sqrt[f]*h)
```

Rubi [A] time = 2.21737, antiderivative size = 447, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2346, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 50, 2445}

$$\frac{8b^2p^2q^2\sqrt{fg-eh}\,\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{\sqrt{f}h}-\frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(\right.\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x],x]
```


```
[Out] (16*b^2*p^2*q^2*Sqrt[g + h*x])/h - (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[
(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(Sqrt[f]*h) - (8*b^2*Sqrt[f*g - e
*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/(Sqrt[f]*h)
 - (8*b*p*q*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (8*b*Sqrt[f
*g - e*h]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[f]*h) + (2*Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f
*x)^p)^q])^2)/h + (16*b^2*Sqrt[f*g - e*h]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g +
 h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])
])/(Sqrt[f]*h) + (8*b^2*Sqrt[f*g - e*h]*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt
[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(Sqrt[f]*h)
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2346

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.))
/(x_), x_Symbol] :> Dist[d, Int[((d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p)/x,
 x], x] + Dist[e, Int[(d + e*x)^(q - 1)*(a + b*Log[c*x^n])^p, x], x] /; Fre
eQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0] && GtQ[q, 0] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h} - \text{Subst}\left(\frac{(4bfpq)\int \frac{\sqrt{g+hx}\left(a+b\log\left(cd^q(e+fx)^{p}\right.\right.}{e+fx}}{h}\right.$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{\sqrt{\frac{fg-eh}{f}+\frac{hx}{f}}(a+b\log}{x}\right.}{h}\right.$$

$$= \frac{2\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{\sqrt{\frac{fg-eh}{f}+\frac{hx}{f}}}\,dx\right.}{f}\right.$$

$$= -\frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{8b\sqrt{fg-eh}\,pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)(a}{\sqrt{f}h}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{8b\sqrt{fg-eh}\,pq\,\text{ta}}{}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{8bpq\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} + \frac{8b\sqrt{fg-eh}\,pq\,\text{ta}}{}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{16b^2\sqrt{fg-eh}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}h} - \frac{8bpq\sqrt{g+hx}\left(a+b\,\text{l}\right.}{h}$$

$$= \frac{16b^2p^2q^2\sqrt{g+hx}}{h} - \frac{16b^2\sqrt{fg-eh}\,p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\sqrt{f}h} - \frac{8b^2\sqrt{fg-eh}\,p^2q^2\,\text{tan}}{\sqrt{f}h}$$

Mathematica [C] time = 1.60494, size = 646, normalized size = 1.45

$$2\left(b^2hp^2q^2(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(\frac{1}{2},1,1,1;2,2,2;\frac{h(e+fx)}{eh-fg}\right)-b^2hp^2q^2(e+fx)\log(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_3F_2\left(\frac{1}{2},1,1;2,2;\frac{h(e+f}{eh-f}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x],x]
```

```
[Out] (2*(a^2*f*g - 4*a*b*f*g*p*q + a^2*f*h*x - 4*a*b*f*h*p*q*x + 4*a*b*Sqrt[f]*S
qrt[f*g - e*h]*p*q*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]] + b^2*h*p^2*q^2*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Hypergeome
tricPFQ[{1/2, 1, 1, 1}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + 4*b^2*f*
g*p^2*q^2*Log[e + f*x] + 4*b^2*f*h*p^2*q^2*x*Log[e + f*x] - 4*b^2*Sqrt[f]*S
qrt[f*g - e*h]*p^2*q^2*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f
*g - e*h]]*Log[e + f*x] - b^2*h*p^2*q^2*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g -
 e*h)]*HypergeometricPFQ[{1/2, 1, 1}, {2, 2}, (h*(e + f*x))/(-(f*g) + e*h)]
*Log[e + f*x] - b^2*f*g*p^2*q^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x
]^2 + b^2*e*h*p^2*q^2*Sqrt[(f*(g + h*x))/(f*g - e*h)]*Log[e + f*x]^2 + 2*a*
b*f*g*Log[c*(d*(e + f*x)^p)^q] - 4*b^2*f*g*p*q*Log[c*(d*(e + f*x)^p)^q] + 2
*a*b*f*h*x*Log[c*(d*(e + f*x)^p)^q] - 4*b^2*f*h*p*q*x*Log[c*(d*(e + f*x)^p)
^q] + 4*b^2*Sqrt[f]*Sqrt[f*g - e*h]*p*q*Sqrt[g + h*x]*ArcTanh[(Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h]]*Log[c*(d*(e + f*x)^p)^q] + b^2*f*g*Log[c*(d*(e
+ f*x)^p)^q]^2 + b^2*f*h*x*Log[c*(d*(e + f*x)^p)^q]^2))/(f*h*Sqrt[g + h*x])
```

Maple [F] time = 0.667, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}\frac{1}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}a^2}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^p\right)^q\right)\right)^2}{\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/sqrt(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/sqrt(h*x + g), x)
```

3.492 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=330

$$-\frac{8b^2\sqrt{f}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{h\sqrt{fg-eh}}-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}}-\frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\right.\right.}{h\sqrt{fg-eh}}$$

```
[Out] (8*b^2*Sqrt[f]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(h*Sqrt[f*g - e*h]) - (8*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[f*g - e*h]) - (2*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2)/(h*Sqrt[g + h*x]) - (16*b^2*Sqrt[f]*p^2*q^
2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*g - e*h]) - (8*b^2*Sqrt[f]*p^2*q^2*
PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*
g - e*h])
```

Rubi [A] time = 1.62029, antiderivative size = 330, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 13, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.433, Rules used = {2398, 2411, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2445}

$$-\frac{8b^2\sqrt{f}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{h\sqrt{fg-eh}}-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}}-\frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\right.\right.}{h\sqrt{fg-eh}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(3/2),x]
```

```
[Out] (8*b^2*Sqrt[f]*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(h*Sqrt[f*g - e*h]) - (8*b*Sqrt[f]*p*q*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[f*g - e*h]) - (2*(a
+ b*Log[c*(d*(e + f*x)^p)^q])^2)/(h*Sqrt[g + h*x]) - (16*b^2*Sqrt[f]*p^2*q^
2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt
[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*g - e*h]) - (8*b^2*Sqrt[f]*p^2*q^2*
PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(h*Sqrt[f*
g - e*h])
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{3/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{3/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)\sqrt{g+hx}}\,dx}{h}, cd^q(e+$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{h\sqrt{g+hx}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^q x^{pq})}{x\sqrt{\frac{fg-eh}{f}+\frac{hx}{f}}}\,dx, x, e+\right.}{h}\right.$$

$$= -\frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h\sqrt{g+hx}}$$

$$= -\frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h\sqrt{g+hx}}$$

$$= -\frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h\sqrt{g+hx}}$$

$$= -\frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{fg-eh}} - \frac{2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h\sqrt{g+hx}}$$

$$= \frac{8b^2\sqrt{f}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{h\sqrt{fg-eh}} - \frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{h\sqrt{fg-eh}}$$

$$= \frac{8b^2\sqrt{f}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{h\sqrt{fg-eh}} - \frac{8b\sqrt{f}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+f\right.\right.\right.}{h\sqrt{fg-eh}}$$

Mathematica [C] time = 3.69164, size = 356, normalized size = 1.08

$$\frac{2\left(\frac{b^2p^2q^2\left(h(e+fx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(1,1,1,\frac{3}{2};2,2,2;\frac{h(e+fx)}{eh-fg}\right)+(fg-eh)\log(e+fx)\left(\log(e+fx)\left(\sqrt{\frac{f(g+hx)}{fg-eh}}-1\right)-4\sqrt{\frac{f(g+hx)}{fg-eh}}\log\left(\frac{1}{2}\left(\sqrt{\frac{f(g+hx)}{fg-eh}}+1\right)\right)\right)\right)}{\sqrt{g+hx}(fg-eh)}-\frac{\left(a+b\log\left(c\left(a\right.\right.\right.}{}\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(3/2),x]
```

```
[Out] (2*((2*b*p*q*(2*Sqrt[f]*(g + h*x)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g
- e*h]] + Sqrt[f*g - e*h]*Sqrt[g + h*x]*Log[e + f*x])*(-a + b*p*q*Log[e + f
*x] - b*Log[c*(d*(e + f*x)^p)^q]))/(Sqrt[f*g - e*h]*(g + h*x)) - (a - b*p*q
*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2/Sqrt[g + h*x] + (b^2*p^2*q^2*
(h*(e + f*x)*Sqrt[(f*(g + h*x))/(f*g - e*h)]*HypergeometricPFQ[{1, 1, 1, 3/
2}, {2, 2, 2}, (h*(e + f*x))/(-(f*g) + e*h)] + (f*g - e*h)*Log[e + f*x]*((-
1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])*Log[e + f*x] - 4*Sqrt[(f*(g + h*x))/(f
*g - e*h)]*Log[(1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])/2])))/((f*g - e*h)*Sqr
t[g + h*x])))/h
```

Maple [F] time = 0.669, size = 0, normalized size = 0.

$$\int\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}\left(hx+g\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}b^2\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\sqrt{hx+g}ab\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\sqrt{hx+g}a^{2}}{h^{2}x^{2}+2ghx+g^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^2*x^2 + 2*g*h*x + g^2),
x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}}{\left(g + hx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(3/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x)**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx + e\right)^{p}d\right)^{q}c\right) + a\right)^{2}}{\left(hx + g\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(3/2), x)
```

3.493 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{5/2}}\,dx$

Optimal. Leaf size=449

$$-\frac{8b^2f^{3/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3h(fg-eh)^{3/2}}-\frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)^{3/2}}+\frac{8bfpq\left(a+b\log\right.}{3h\sqrt{g+}}$$

```
[Out] (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(
3*h*(f*g - e*h)^(3/2)) + (8*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h
*x])/Sqrt[f*g - e*h]]^2)/(3*h*(f*g - e*h)^(3/2)) + (8*b*f*p*q*(a + b*Log[c*
(d*(e + f*x)^p)^q]))/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (8*b*f^(3/2)*p*q*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(3*h*
(g + h*x)^(3/2)) - (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/
Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h
*(f*g - e*h)^(3/2)) - (8*b^2*f^(3/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]
*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h*(f*g - e*h)^(3/2))
```

Rubi [A] time = 2.37791, antiderivative size = 449, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 15, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 2445}

$$-\frac{8b^2f^{3/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{3h(fg-eh)^{3/2}}-\frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)^{3/2}}+\frac{8bfpq\left(a+b\log\right.}{3h\sqrt{g+}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(5/2),x]
```


```
[Out] (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(
3*h*(f*g - e*h)^(3/2)) + (8*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h
*x])/Sqrt[f*g - e*h]]^2)/(3*h*(f*g - e*h)^(3/2)) + (8*b*f*p*q*(a + b*Log[c*
(d*(e + f*x)^p)^q]))/(3*h*(f*g - e*h)*Sqrt[g + h*x]) - (8*b*f^(3/2)*p*q*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(3*h*(f*g - e*h)^(3/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(3*h*
(g + h*x)^(3/2)) - (16*b^2*f^(3/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/
Sqrt[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h
*(f*g - e*h)^(3/2)) - (8*b^2*f^(3/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]
*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(3*h*(f*g - e*h)^(3/2))
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{5/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{5/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^{3/2}}\,dx}{3h}, cd^q(e+\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h(g+hx)^{3/2}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^q x^{pq})}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{3/2}}\,dx, x, e+\right.}{3h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{3h(g+hx)^{3/2}} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^q x^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{3/2}}\,dx, x, e+\right.}{3(fg-eh)}\right.$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(\right.\right.\right.}{3h(fg-eh)^{3/2}}$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\log\left(c\left(d(\right.\right.\right.}{3h(fg-eh)^{3/2}}$$

$$= \frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq}{}$$

$$= \frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{3h(fg-eh)\sqrt{g+hx}} - \frac{8bf^{3/2}pq}{}$$

$$= \frac{16b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{3h(fg-eh)^{3/2}} + \frac{8b^2f^{3/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)^2}{3h(fg-eh)^{3/2}} + \frac{8bfpq\left(a+b\right.}{3h(fg}$$

Mathematica [C] time = 6.17957, size = 657, normalized size = 1.46

$$2\left(3b^2fhp^2q^2(e+fx)(g+hx)\sqrt{\frac{f(g+hx)}{fg-eh}}\,{}_4F_3\left(1,1,1,\frac{5}{2};2,2,2;\frac{h(e+fx)}{eh-fg}\right)-(fg-eh)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)-bpq\log\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(5/2),x]
```

```
[Out] (2*(-4*a*b*f^(3/2)*Sqrt[f*g - e*h]*p*q*(g + h*x)^(3/2)*ArcTanh[(Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h]] + 3*b^2*f*h*p^2*q^2*(e + f*x)*(g + h*x)*Sqrt[(
f*(g + h*x))/(f*g - e*h)]*HypergeometricPFQ[{1, 1, 1, 5/2}, {2, 2, 2}, (h*(
e + f*x))/(-(f*g) + e*h)] + 4*b^2*f^(3/2)*Sqrt[f*g - e*h]*p^2*q^2*(g + h*x)
^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*Log[e + f*x] + 2*a*
b*(f*g - e*h)*p*q*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x]) - 2*b^2*(f*
g - e*h)*p^2*q^2*Log[e + f*x]*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x])
 - 4*b^2*f^(3/2)*Sqrt[f*g - e*h]*p*q*(g + h*x)^(3/2)*ArcTanh[(Sqrt[f]*Sqrt[
g + h*x])/Sqrt[f*g - e*h]]*Log[c*(d*(e + f*x)^p)^q] + 2*b^2*(f*g - e*h)*p*q
*(2*f*(g + h*x) + (-(f*g) + e*h)*Log[e + f*x])*Log[c*(d*(e + f*x)^p)^q] - (
f*g - e*h)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2 + b^2*
(f*g - e*h)*p^2*q^2*Log[e + f*x]*((e*h + f*h*x*Sqrt[(f*(g + h*x))/(f*g - e*
h)] + f*g*(-1 + Sqrt[(f*(g + h*x))/(f*g - e*h)]))*Log[e + f*x] - 4*f*(g + h
*x)*(-1 + Sqrt[(f*(g + h*x))/(f*g - e*h)] + Sqrt[(f*(g + h*x))/(f*g - e*h)]
*Log[(1 + Sqrt[(f*(g + h*x))/(f*g - e*h)])/2]))))/(3*h*(f*g - e*h)^2*(g + h
*x)^(3/2))
```

Maple [F] time = 0.674, size = 0, normalized size = 0.

$$\int\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}\left(hx+g\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\sqrt{hx+g}ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+\sqrt{hx+g}a^2}{h^3x^3+3gh^2x^2+3g^2hx+g^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^3*x^3 + 3*g*h^2*x^2 + 3*
g^2*h*x + g^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\left(hx+g\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(5/2), x)
```

3.494 $\int \frac{\left(a+b \log \left(c \left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{7/2}} \, dx$

Optimal. Leaf size=537

$$-\frac{8b^2f^{5/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5h(fg-eh)^{5/2}}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h\sqrt{g+hx}(fg-eh)^2}-\frac{8bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\right.}{5h(fg-eh)^{5/2}}$$

```
[Out] (-16*b^2*f^2*p^2*q^2)/(15*h*(f*g - e*h)^2*Sqrt[g + h*x]) + (64*b^2*f^(5/2)*
p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(15*h*(f*g - e*h)
^(5/2)) + (8*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]]^2)/(5*h*(f*g - e*h)^(5/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q]))/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(5*h*(f*g - e*h)^2*Sqrt[g + h*x]) - (8*b*f^(5/2)*p*q*ArcTanh
[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))
/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(5*h*(g +
 h*x)^(5/2)) - (16*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*
g - e*h)^(5/2)) - (8*b^2*f^(5/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*g - e*h)^(5/2))
```

Rubi [A] time = 3.08392, antiderivative size = 537, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51, 2445}

$$-\frac{8b^2f^{5/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{5h(fg-eh)^{5/2}}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{5h\sqrt{g+hx}(fg-eh)^2}-\frac{8bf^{5/2}pq\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)\left(a+b\right.}{5h(fg-eh)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(7/2),x]
```



```
[Out] (-16*b^2*f^2*p^2*q^2)/(15*h*(f*g - e*h)^2*Sqrt[g + h*x]) + (64*b^2*f^(5/2)*
p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(15*h*(f*g - e*h)
^(5/2)) + (8*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g -
 e*h]]^2)/(5*h*(f*g - e*h)^(5/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)
^q]))/(15*h*(f*g - e*h)*(g + h*x)^(3/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(5*h*(f*g - e*h)^2*Sqrt[g + h*x]) - (8*b*f^(5/2)*p*q*ArcTanh
[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q]))
/(5*h*(f*g - e*h)^(5/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(5*h*(g +
 h*x)^(5/2)) - (16*b^2*f^(5/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt
[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*
g - e*h)^(5/2)) - (8*b^2*f^(5/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sqr
t[g + h*x])/Sqrt[f*g - e*h])])/(5*h*(f*g - e*h)^(5/2))
```


Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
```

```
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{7/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{7/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^{5/2}}\,dx}{5h}, cd^q(e+ \cdots\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^q x^{pq})}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{5/2}}\,dx, x, e+ \cdots\right.}{5h} \cdots\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^q x^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{5/2}}\,dx, x, e+ \cdots\right.}{5(fg-eh)} \cdots\right.$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{15h(fg-eh)(g+hx)^{3/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{5h(g+hx)^{5/2}} - \text{Subst}\left(\frac{(4 \cdots}{\cdots}\right.$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{15h(fg-eh)(g+hx)^{3/2}} + \frac{8bf^2pq\left(a+b\log \cdots\right.}{5h(fg-e \cdots}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{15h(fg-eh)(g+hx)^{3/2}} + \frac{8bf^2pq\left(a+b\log \cdots\right.}{5h(fg-e \cdots}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{15h(fg-eh)^{5/2}} + \frac{8bfpq\left(a+b\log\left(c \cdots\right.\right.}{15h(fg-eh)(g \cdots}$$

$$= -\frac{16b^2f^2p^2q^2}{15h(fg-eh)^2\sqrt{g+hx}} + \frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{15h(fg-eh)^{5/2}} + \frac{8bfpq\left(a+b\log\left(c \cdots\right.\right.}{15h(fg-eh)(g \cdots}$$

$$\frac{16b^2f^2p^2q^2}{\cdots} \quad \frac{64b^2f^{5/2}p^2q^2\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right)}{\cdots} \quad \frac{8b^2f^{5/2}p^2q^2\tanh^{-1} \cdots}{\cdots}$$

Mathematica [C] time = 7.73987, size = 1183, normalized size = 2.2

$$\frac{4abpq\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}\left(-3\log(e+fx)(fg-eh)^2+2(fg+fhx)(fg-eh)+6(fg+fhx)^2\right)}{(fg-eh)^2(fg+fhx)^3}-\frac{6\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{5/2}}\right)f^{5/2}}{15h}+\frac{4b^2pq^2\left(\sqrt{f}\sqrt{\frac{fg-eh}{}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(7/2),x]
```

```
[Out] (2*b^2*p^2*q^2*(1 + (h*(e + f*x))/(f*g - e*h))*(5*h*(e + f*x)*((f*g - e*h +
 h*(e + f*x))/(f*g - e*h))^(5/2)*HypergeometricPFQ[{1, 1, 1, 7/2}, {2, 2, 2
}, (h*(e + f*x))/(-(f*g) + e*h)] - 5*h*(e + f*x)*((f*g - e*h + h*(e + f*x))
/(f*g - e*h))^(5/2)*HypergeometricPFQ[{1, 1, 7/2}, {2, 2}, (h*(e + f*x))/(-
(f*g) + e*h)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*
((f*g - e*h + h*(e + f*x))/(f*g - e*h))^(5/2)*Log[e + f*x]^2 - e*h*((f*g -
e*h + h*(e + f*x))/(f*g - e*h))^(5/2)*Log[e + f*x]^2))/(5*f*h*((f*g - e*h +
 h*(e + f*x))/f)^(7/2)) + (4*a*b*f^(5/2)*p*q*((-6*ArcTanh[(Sqrt[f]*Sqrt[(f*
g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(5/2) + (Sqrt[f]*S
qrt[(f*g - e*h + h*(e + f*x))/f]*(2*(f*g - e*h)*(f*g + f*h*x) + 6*(f*g + f*
h*x)^2 - 3*(f*g - e*h)^2*Log[e + f*x]))/((f*g - e*h)^2*(f*g + f*h*x)^3)))/(
15*h) + (4*b^2*f^(5/2)*p*q^2*((-6*ArcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e +
 f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(5/2) + (Sqrt[f]*Sqrt[(f*g - e*h +
 h*(e + f*x))/f]*(2*(f*g - e*h)*(f*g + f*h*x) + 6*(f*g + f*h*x)^2 - 3*(f*g
- e*h)^2*Log[e + f*x]))/((f*g - e*h)^2*(f*g + f*h*x)^3))*(-(p*Log[e + f*x])
 + Log[d*(e + f*x)^p]))/(15*h) + (4*b^2*f^(5/2)*p*q*((-6*ArcTanh[(Sqrt[f]*S
qrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(5/2) + (Sq
rt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(2*(f*g - e*h)*(f*g + f*h*x) + 6*(f
*g + f*h*x)^2 - 3*(f*g - e*h)^2*Log[e + f*x]))/((f*g - e*h)^2*(f*g + f*h*x)
^3))*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q
 - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c
*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(
p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])]))/(15*h) - (2*(
a + b*q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]
) + Log[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) +
Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) +
Log[d*(e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e
+ f*x)^p]))/Log[d*(e + f*x)^p])]))^2)/(5*h*(g + h*x)^(5/2))
```

Maple [F] time = 0.63, size = 0, normalized size = 0.

$$\int\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}\left(hx+g\right)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\sqrt{hx+g}ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + \sqrt{hx+g}a^2}{h^4x^4+4gh^3x^3+6g^2h^2x^2+4g^3hx+g^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^4*x^4 + 4*g*h^3*x^3 + 6*
g^2*h^2*x^2 + 4*g^3*h*x + g^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{\left(hx+g\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(7/2), x)
```

3.495 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{9/2}}\,dx$

Optimal. Leaf size=625

$$-\frac{8b^2f^{7/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{7h(fg-eh)^{7/2}}+\frac{8bf^3pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h\sqrt{g+hx}(fg-eh)^3}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{21h(g+hx)^{3/2}(fg-eh)^2}$$

```
[Out] (-16*b^2*f^2*p^2*q^2)/(105*h*(f*g - e*h)^2*(g + h*x)^(3/2)) - (128*b^2*f^3*
p^2*q^2)/(105*h*(f*g - e*h)^3*Sqrt[g + h*x]) + (368*b^2*f^(7/2)*p^2*q^2*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(105*h*(f*g - e*h)^(7/2)) +
(8*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(7*h*(f*g - e*h)^(7/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(35*
h*(f*g - e*h)*(g + h*x)^(5/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(21*h*(f*g - e*h)^2*(g + h*x)^(3/2)) + (8*b*f^3*p*q*(a + b*Log[c*(d*(e
 + f*x)^p)^q]))/(7*h*(f*g - e*h)^3*Sqrt[g + h*x]) - (8*b*f^(7/2)*p*q*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(7*h*(f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(7*h*(g
+ h*x)^(7/2)) - (16*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqr
t[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f
*g - e*h)^(7/2)) - (8*b^2*f^(7/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sq
rt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f*g - e*h)^(7/2))
```

Rubi [A] time = 3.92716, antiderivative size = 625, normalized size of antiderivative = 1., number of steps used = 26, number of rules used = 16, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.533, Rules used = {2398, 2411, 2347, 63, 208, 2348, 12, 1587, 6741, 5984, 5918, 2402, 2315, 2319, 51, 2445}

$$-\frac{8b^2f^{7/2}p^2q^2\text{PolyLog}\left(2,1-\frac{2}{1-\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}}\right)}{7h(fg-eh)^{7/2}}+\frac{8bf^3pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{7h\sqrt{g+hx}(fg-eh)^3}+\frac{8bf^2pq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{21h(g+hx)^{3/2}(fg-eh)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(9/2),x]
```

```
[Out] (-16*b^2*f^2*p^2*q^2)/(105*h*(f*g - e*h)^2*(g + h*x)^(3/2)) - (128*b^2*f^3*
p^2*q^2)/(105*h*(f*g - e*h)^3*Sqrt[g + h*x]) + (368*b^2*f^(7/2)*p^2*q^2*Arc
Tanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]])/(105*h*(f*g - e*h)^(7/2)) +
(8*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]^2)/
(7*h*(f*g - e*h)^(7/2)) + (8*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(35*
h*(f*g - e*h)*(g + h*x)^(5/2)) + (8*b*f^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q]))/(21*h*(f*g - e*h)^2*(g + h*x)^(3/2)) + (8*b*f^3*p*q*(a + b*Log[c*(d*(e
 + f*x)^p)^q]))/(7*h*(f*g - e*h)^3*Sqrt[g + h*x]) - (8*b*f^(7/2)*p*q*ArcTan
h[(Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h]]*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(7*h*(f*g - e*h)^(7/2)) - (2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(7*h*(g
+ h*x)^(7/2)) - (16*b^2*f^(7/2)*p^2*q^2*ArcTanh[(Sqrt[f]*Sqrt[g + h*x])/Sqr
t[f*g - e*h]]*Log[2/(1 - (Sqrt[f]*Sqrt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f
*g - e*h)^(7/2)) - (8*b^2*f^(7/2)*p^2*q^2*PolyLog[2, 1 - 2/(1 - (Sqrt[f]*Sq
rt[g + h*x])/Sqrt[f*g - e*h])])/(7*h*(f*g - e*h)^(7/2))
```

Rule 2398

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^
n])^p)/(g*(q + 1)), x] - Dist[(b*e*n*p)/(g*(q + 1)), Int[((f + g*x)^(q + 1)
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && GtQ[p, 0] && NeQ[q, -1] && Int
egersQ[2*p, 2*q] && ( !IGtQ[q, 0] || (EqQ[p, 2] && NeQ[q, 1]))
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2347

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_))/
(x_), x_Symbol] :> Dist[1/d, Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/x
, x], x] - Dist[e/d, Int[(d + e*x)^q*(a + b*Log[c*x^n])^p, x], x] /; FreeQ[
{a, b, c, d, e, n}, x] && IGtQ[p, 0] && LtQ[q, -1] && IntegerQ[2*q]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 2348

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_) + (e_.)*(x_)^(r_.))^(q_.))
/(x_), x_Symbol] :> With[{u = IntHide[(d + e*x^r)^q/x, x]}, Simp[u*(a + b*L
og[c*x^n]), x] - Dist[b*n, Int[Dist[1/x, u, x], x], x]] /; FreeQ[{a, b, c,
d, e, n, r}, x] && IntegerQ[q - 1/2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 1587

```
Int[(Pp_)/(Qq_), x_Symbol] :> With[{p = Expon[Pp, x], q = Expon[Qq, x]}, Si
mp[(Coeff[Pp, x, p]*Log[RemoveContent[Qq, x]])/(q*Coeff[Qq, x, q]), x] /; E
qQ[p, q - 1] && EqQ[Pp, Simplify[(Coeff[Pp, x, p]*D[Qq, x])/(q*Coeff[Qq, x,
 q])]]] /; PolyQ[Pp, x] && PolyQ[Qq, x]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rule 5984

```
Int[(((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
 x_Symbol] :> Simp[(a + b*ArcTanh[c*x])^(p + 1)/(b*e*(p + 1)), x] + Dist[1/
(c*d), Int[(a + b*ArcTanh[c*x])^p/(1 - c*x), x], x] /; FreeQ[{a, b, c, d, e
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 5918

```
Int[((a_.) + ArcTanh[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol
] :> -Simp[((a + b*ArcTanh[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] + Dist[(b*c*
p)/e, Int[((a + b*ArcTanh[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 - c^2*x^2)
, x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 - e^2, 0
]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2319

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_) + (e_.)*(x_))^(q_.),
x_Symbol] :> Simp[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^p)/(e*(q + 1)), x]
- Dist[(b*n*p)/(e*(q + 1)), Int[((d + e*x)^(q + 1)*(a + b*Log[c*x^n])^(p -
1))/x, x], x] /; FreeQ[{a, b, c, d, e, n, p, q}, x] && GtQ[p, 0] && NeQ[q,
-1] && (EqQ[p, 1] || (IntegersQ[2*p, 2*q] &&  !IGtQ[q, 0]) || (EqQ[p, 2] &&
 NeQ[q, 1]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)^{9/2}}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)^{9/2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(4bfpq)\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(e+fx)(g+hx)^{7/2}}\,dx}{7h}, cd^q(e+\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} + \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{x\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{7/2}}\,dx, x, e+\right.}{7h}\right.$$

$$= -\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} - \text{Subst}\left(\frac{(4bpq)\,\text{Subst}\left(\int \frac{a+b\log(cd^qx^{pq})}{\left(\frac{fg-eh}{f}+\frac{hx}{f}\right)^{7/2}}\,dx, x, e+\right.}{7(fg-eh)}\right.$$

$$= \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{35h(fg-eh)(g+hx)^{5/2}} - \frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{7h(g+hx)^{7/2}} - \text{Subst}\left(\frac{(4}{}\right.$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{35h(fg-eh)(g+hx)^{5/2}} + \frac{8bf^2pq\left(a+b\right.}{21h(fg}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e-\right.\right.\right.}{35h(fg-eh)(g+h}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{8bfpq\left(a+b\log\left(c\left(d(e-\right.\right.\right.}{35h(fg-eh)(g+h}$$

$$= -\frac{16b^2f^2p^2q^2}{105h(fg-eh)^2(g+hx)^{3/2}} - \frac{128b^2f^3p^2q^2}{105h(fg-eh)^3\sqrt{g+hx}} + \frac{368b^2f^{7/2}p^2q^2\tanh^{-1}\left(\right.}{105h(fg-eh)^{7/2}}$$

$$= -\frac{16b^2f^2p^2q^2}{} - \frac{128b^2f^3p^2q^2}{} + \frac{368b^2f^{7/2}p^2q^2\tanh^{-1}\left(\right.}{}$$

Mathematica [C] time = 7.79691, size = 1249, normalized size = 2.

$$\frac{4abpq\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}\left(-15\log(e+fx)(fg-eh)^3+6(fg+fhx)(fg-eh)^2+10(fg+fhx)^2(fg-eh)+30(fg+fhx)^3\right)}{(fg-eh)^3(fg+fhx)^4}-\frac{30\tanh^{-1}\left(\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right)}{(fg-eh)^{7/2}}\right)f^{7/2}}{105h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x)^(9/2),x]
```

```
[Out] (2*b^2*p^2*q^2*(1 + (h*(e + f*x))/(f*g - e*h))*(7*h*(e + f*x)*((f*g - e*h +
 h*(e + f*x))/(f*g - e*h))^(7/2)*HypergeometricPFQ[{1, 1, 1, 9/2}, {2, 2, 2
}, (h*(e + f*x))/(-(f*g) + e*h)] - 7*h*(e + f*x)*((f*g - e*h + h*(e + f*x))
/(f*g - e*h))^(7/2)*HypergeometricPFQ[{1, 1, 9/2}, {2, 2}, (h*(e + f*x))/(-
(f*g) + e*h)]*Log[e + f*x] - f*g*Log[e + f*x]^2 + e*h*Log[e + f*x]^2 + f*g*
((f*g - e*h + h*(e + f*x))/(f*g - e*h))^(7/2)*Log[e + f*x]^2 - e*h*((f*g -
e*h + h*(e + f*x))/(f*g - e*h))^(7/2)*Log[e + f*x]^2))/(7*f*h*((f*g - e*h +
 h*(e + f*x))/f)^(9/2)) + (4*a*b*f^(7/2)*p*q*((-30*ArcTanh[(Sqrt[f]*Sqrt[(f
*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(7/2) + (Sqrt[f]*
Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(f*g + f*h*x) + 10*(f*g
- e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*g - e*h)^3*Log[e + f*x]
))/((f*g - e*h)^3*(f*g + f*h*x)^4)))/(105*h) + (4*b^2*f^(7/2)*p*q^2*((-30*A
rcTanh[(Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g -
 e*h)^(7/2) + (Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(
f*g + f*h*x) + 10*(f*g - e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*
g - e*h)^3*Log[e + f*x]))/((f*g - e*h)^3*(f*g + f*h*x)^4))*(-(p*Log[e + f*x
]) + Log[d*(e + f*x)^p]))/(105*h) + (4*b^2*f^(7/2)*p*q*((-30*ArcTanh[(Sqrt[
f]*Sqrt[(f*g - e*h + h*(e + f*x))/f])/Sqrt[f*g - e*h]])/(f*g - e*h)^(7/2) +
 (Sqrt[f]*Sqrt[(f*g - e*h + h*(e + f*x))/f]*(6*(f*g - e*h)^2*(f*g + f*h*x)
+ 10*(f*g - e*h)*(f*g + f*h*x)^2 + 30*(f*g + f*h*x)^3 - 15*(f*g - e*h)^3*Lo
g[e + f*x]))/((f*g - e*h)^3*(f*g + f*h*x)^4))*(-(q*(-(p*Log[e + f*x]) + Log
[d*(e + f*x)^p])) - Log[d*(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(
e + f*x)^p]))/Log[d*(e + f*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(
e + f*x)^p]))*(d*(e + f*x)^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^
p]))/Log[d*(e + f*x)^p])]))/(105*h) - (2*(a + b*q*(-(p*Log[e + f*x]) + Log[
d*(e + f*x)^p]) + b*(-(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p])) - Log[d*
(e + f*x)^p]*(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f
*x)^p]) + Log[c*E^(q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))*(d*(e + f*x)
^p)^(q - (q*(-(p*Log[e + f*x]) + Log[d*(e + f*x)^p]))/Log[d*(e + f*x)^p])])
)^2)/(7*h*(g + h*x)^(7/2))
```

Maple [F] time = 0.623, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}\left(hx+g\right)^{-\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}b^2\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^2+2\sqrt{hx+g}ab\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+\sqrt{hx+g}a^2}{h^5x^5+5gh^4x^4+10g^2h^3x^3+10g^3h^2x^2+5g^4hx+g^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x + g)*b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*sqrt(h*x + g)*a*
b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x + g)*a^2)/(h^5*x^5 + 5*g*h^4*x^4 + 10
*g^2*h^3*x^3 + 10*g^3*h^2*x^2 + 5*g^4*h*x + g^5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^2}{\left(hx+g\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g)^(9/2), x)
```

3.496 $\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi [A] time = 0.0882588, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] Defer[Int][(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 1.23183, size = 0, normalized size = 0.

$$\int \frac{(g+hx)^{3/2}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] Integrate[(g + h*x)^(3/2)/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Maple [A] time = 0.651, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\left(hx+g\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^{\frac{3}{2}}}{b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(hx+g)^{\frac{3}{2}}}{b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^{\frac{3}{2}}}{b\log\left(\left((fx+e)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^(3/2)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.497 $\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi [A] time = 0.0781728, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]

[Out] Defer[Int][Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 1.05655, size = 0, normalized size = 0.

$$\int \frac{\sqrt{g+hx}}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]

[Out] Integrate[Sqrt[g + h*x]/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Maple [A] time = 0.652, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\sqrt{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{hx+g}}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{hx+g}}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(h*x + g)/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.498 $\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.0819394, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx = \int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 1.51599, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{g+hx}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/(Sqrt[g + h*x]*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.621, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\frac{1}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

```
[Out] int(1/(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(1/(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}}{ahx+ag+\left(bhx+bg\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c
)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)**(1/2),x)
```

```
[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*sqrt(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{hx+g}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.499 $\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.0873596, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 1.69055, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)^{3/2}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)^(3/2)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.65, size = 0, normalized size = 0.

$$\int \frac{1}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\left(hx+g\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima
")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx+g}}{ah^2x^2+2\,aghx+ag^2+\left(bh^2x^2+2\,bghx+bg^2\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(h*x + g)/(a*h^2*x^2 + 2*a*g*h*x + a*g^2 + (b*h^2*x^2 + 2*b*g*
h*x + b*g^2)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.500 $\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi [A] time = 0.332488, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] Defer[Int][Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 1.71495, size = 0, normalized size = 0.

$$\int \sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] Integrate[Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Maple [A] time = 0.964, size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^(1/2)*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.501 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}},x\right)$$

```
[Out] Unintegrable[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

Rubi [A] time = 0.309956, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x],x]
```

```
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx = \int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Mathematica [A] time = 1.96321, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{\sqrt{g+hx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x],x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/Sqrt[g + h*x], x]
```

Maple [A] time = 0.657, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\frac{1}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x + g), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b \log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}}{\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(g + h*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a}}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x + g), x)
```

3.502 $\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}},x\right)$$

```
[Out] Unintegrable[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

Rubi [A] time = 0.324221, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2),x]
```

```
[Out] Defer[Int][Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx=\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Mathematica [A] time = 1.61862, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}{(g+hx)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2),x]
```

```
[Out] Integrate[Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]/(g + h*x)^(3/2), x]
```

Maple [A] time = 0.621, size = 0, normalized size = 0.

$$\int \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\left(hx+g\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a}}{\left(hx+g\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(3/2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2)/(h*x+g)**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{b \log\left(\left(\left(fx+e\right)^{p} d\right)^{q} c\right)+a}}{\left(hx+g\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^(1/2)/(h*x+g)^(3/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g)^(3/2), x)
```

3.503 $\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

[Out] Unintegrable[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]

Rubi [A] time = 0.112112, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

[In] Int[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]

[Out] Defer[Int][Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]

Rubi steps

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 7.35352, size = 0, normalized size = 0.

$$\int \frac{\sqrt{g+hx}}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]

[Out] Integrate[Sqrt[g + h*x]/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]

Maple [A] time = 0.654, size = 0, normalized size = 0.

$$\int \sqrt{hx+g}\frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{hx+g}}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate(sqrt(h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fr
icas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{hx+g}}{\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate(sqrt(h*x + g)/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.504 $\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi [A] time = 0.116901, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Defer[Int][1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 3.93154, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{g+hx}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Integrate[1/(Sqrt[g + h*x]*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Maple [A] time = 0.973, size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{hx+g}}\frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(h*x+g)^(1/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate(1/(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(1/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*log(c*(d*(e + f*x)**p)**q))*sqrt(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{hx+g}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(1/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(1/(sqrt(h*x + g)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.505 $\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=34

$$\text{Unintegrable}\left(\frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi [A] time = 0.120249, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Defer[Int][1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx=\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 0.97318, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)^{3/2}\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]),x]
```

```
[Out] Integrate[1/((g + h*x)^(3/2)*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]]), x]
```

Maple [A] time = 1.007, size = 0, normalized size = 0.

$$\int (hx+g)^{-\frac{3}{2}}\frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int(1/(h*x+g)^(3/2)/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
fricas")
```

```
[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)**(3/2)/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)^{\frac{3}{2}}\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)^(3/2)/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(1/((h*x + g)^(3/2)*sqrt(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.506 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\,dx$

Optimal. Leaf size=99

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(m+1)}+\frac{bfpq(g+hx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{h(m+1)(m+2)(fg-eh)}$$

```
[Out] (b*f*p*q*(g + h*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (f*(g + h*x))
/(f*g - e*h)])/(h*(f*g - e*h)*(1 + m)*(2 + m)) + ((g + h*x)^(1 + m)*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(h*(1 + m))
```

Rubi [A] time = 0.105924, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {2395, 68, 2445}

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(m+1)}+\frac{bfpq(g+hx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{h(m+1)(m+2)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] (b*f*p*q*(g + h*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (f*(g + h*x))
/(f*g - e*h)])/(h*(f*g - e*h)*(1 + m)*(2 + m)) + ((g + h*x)^(1 + m)*(a + b*
Log[c*(d*(e + f*x)^p)^q]))/(h*(1 + m))
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)dx = \text{Subst}\left(\int (g+hx)^m\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$
$$= \frac{(g+hx)^{1+m}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h(1+m)} - \text{Subst}\left(\frac{(bfpq)\int \frac{(g+hx)^{1+m}}{e+fx}dx}{h(1+m)},\right.$$
$$= \frac{bfpq(g+hx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{f(g+hx)}{fg-eh}\right)}{h(fg-eh)(1+m)(2+m)} + \frac{(g+hx)^{1+m}\left(a+b\log\left(\right.\right.}{h(1+m)}$$

Mathematica [A] time = 0.119766, size = 86, normalized size = 0.87

$$\frac{(g+hx)^{m+1}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)+\frac{bfpq(g+hx)\,{}_2F_1\left(1,m+2;m+3;\frac{f(g+hx)}{fg-eh}\right)}{(m+2)(fg-eh)}\right)}{h(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] ((g + h*x)^(1 + m)*(a + (b*f*p*q*(g + h*x)*Hypergeometric2F1[1, 2 + m, 3 + 
m, (f*(g + h*x))/(f*g - e*h)])/((f*g - e*h)*(2 + m)) + b*Log[c*(d*(e + f*x)
^p)^q]))/(h*(1 + m))
```

Maple [F] time = 0.713, size = 0, normalized size = 0.

$$\int (hx+g)^m \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((hx+g)^m b\log\left(\left((fx+e)^p d\right)^q c\right)+(hx+g)^m a, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^m*b*log(((f*x + e)^p*d)^q*c) + (h*x + g)^m*a, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b \log \left(\left(\left(fx + e\right)^{p} d\right)^{q} c\right) + a\right) \left(hx + g\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

3.507 $\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi [A] time = 0.0573508, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx=\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 0.398567, size = 0, normalized size = 0.

$$\int \frac{(g+hx)^m}{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]),x]
```

```
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q]), x]
```

Maple [A] time = 0.654, size = 0, normalized size = 0.

$$\int \frac{\left(hx+g\right)^{m}}{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^m}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(hx+g)^m}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^m}{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.508 $\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

Rubi [A] time = 0.0552597, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 2.43132, size = 0, normalized size = 0.

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2,x]
```

```
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^2, x]
```

Maple [A] time = 0.649, size = 0, normalized size = 0.

$$\int \frac{\left(hx+g\right)^m}{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{(fx+e)(hx+g)^m}{b^2fpq\log\left(\left((fx+e)^p\right)^q\right)+abfpq+\left(fpq\log(c)+fpq\log(d^q)\right)b^2}+\int\frac{}{abfgpq+\left(fgpq\log(c)+fgpq\log(d^q)\right)b^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] -(f*x + e)*(h*x + g)^m/(b^2*f*p*q*log(((f*x + e)^p)^q) + a*b*f*p*q + (f*p*q
*log(c) + f*p*q*log(d^q))*b^2) + integrate((f*h*(m + 1)*x + e*h*m + f*g)*(h
*x + g)^m/(a*b*f*g*p*q + (f*g*p*q*log(c) + f*g*p*q*log(d^q))*b^2 + (a*b*f*h
*p*q + (f*h*p*q*log(c) + f*h*p*q*log(d^q))*b^2)*x + (b^2*f*h*p*q*x + b^2*f*
g*p*q)*log(((f*x + e)^p)^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(hx+g)^m}{b^2\log\left(\left((fx+e)^pd\right)^qc\right)^2+2\,ab\log\left(\left((fx+e)^pd\right)^qc\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral((h*x + g)^m/(b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)
^p*d)^q*c) + a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{(hx+g)^m}{\left(b\log\left(\left((fx+e)^pd\right)^qc\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^2, x)
```

3.509 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left((g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2},x\right)$$

```
[Out] Unintegrable[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi [A] time = 0.110655, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] Defer[Int][(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi steps

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx = \int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$$

Mathematica [A] time = 9.13211, size = 0, normalized size = 0.

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Maple [A] time = 0.653, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^m \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)*(h*x + g)^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(\left(hx+g\right)^{m}b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\left(hx+g\right)^{m}a\right)\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(((h*x + g)^m*b*log(((f*x + e)^p*d)^q*c) + (h*x + g)^m*a)*sqrt(b*lo
g(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{\frac{3}{2}}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^(3/2)*(h*x + g)^m, x)
```

3.510 $\int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left((g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)},x\right)$$

```
[Out] Unintegrable[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi [A] time = 0.0900227, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] Defer[Int][(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx = \int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Mathematica [A] time = 0.0793998, size = 0, normalized size = 0.

$$\int (g+hx)^m \sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] Integrate[(g + h*x)^m*Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Maple [A] time = 0.626, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^m \sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\left(hx+g\right)^{m},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}\left(hx+g\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m, x)
```

3.511 $\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}},x\right)$$

```
[Out] Unintegrable[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi [A] time = 0.0968894, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] Defer[Int][(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx = \int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Mathematica [A] time = 3.82598, size = 0, normalized size = 0.

$$\int \frac{(g+hx)^m}{\sqrt{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]],x]
```

```
[Out] Integrate[(g + h*x)^m/Sqrt[a + b*Log[c*(d*(e + f*x)^p)^q]], x]
```

Maple [A] time = 0.635, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^m \frac{1}{\sqrt{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^m}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(hx+g)^m}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^m}{\sqrt{b\log\left(\left((fx+e)^p d\right)^q c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/sqrt(b*log(((f*x + e)^p*d)^q*c) + a), x)
```

3.512 $\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$

Optimal. Leaf size=32

$$\text{Unintegrable}\left(\frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi [A] time = 0.11423, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] Defer[Int][(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Rubi steps

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx=\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Mathematica [A] time = 3.75185, size = 0, normalized size = 0.

$$\int \frac{(g+hx)^m}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2),x]
```

```
[Out] Integrate[(g + h*x)^m/(a + b*Log[c*(d*(e + f*x)^p)^q])^(3/2), x]
```

Maple [A] time = 0.635, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^m \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

```
[Out] int((h*x+g)^m/(a+b*ln(c*(d*(f*x+e)^p)^q))^(3/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^m}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a}\,(hx+g)^m}{b^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\,ab\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(b*log(((f*x + e)^p*d)^q*c) + a)*(h*x + g)^m/(b^2*log(((f*x +
e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) + a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m/(a+b*ln(c*(d*(f*x+e)**p)**q))**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(hx+g)^m}{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m/(a+b*log(c*(d*(f*x+e)^p)^q))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^m/(b*log(((f*x + e)^p*d)^q*c) + a)^(3/2), x)
```

3.513 $\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left((g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n,x\right)$$

```
[Out] Unintegrable[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

Rubi [A] time = 0.0548252, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] Defer[Int][(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

Rubi steps

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx = \int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$$

Mathematica [A] time = 0.649134, size = 0, normalized size = 0.

$$\int (g+hx)^m \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] Integrate[(g + h*x)^m*(a + b*Log[c*(d*(e + f*x)^p)^q])^n, x]
```

Maple [A] time = 0.86, size = 0, normalized size = 0.

$$\int \left(hx+g\right)^m \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((h*x+g)^m*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")

[Out] Exception raised: RuntimeError
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: UnboundLocalError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")

[Out] Exception raised: UnboundLocalError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**m*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)

[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^m \left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^m*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")

[Out] integrate((h*x + g)^m*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

3.514 $\int (g+hx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=432

$$\frac{h2^{-n}(e+fx)^2 e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1\right.}{f^3}$$

```
[Out] (3^(-1 - n)*h^2*(e + f*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((3*a)/(b*p*q))*f^3*(c*
(d*(e + f*x)^p)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^
n) + (h*(f*g - e*h)*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((2*a)/(b*p*q))
*f^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q)))^n) + ((f*g - e*h)^2*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f
*x)^p)^q])/(b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
)))^n)
```

Rubi [A] time = 0.957288, antiderivative size = 432, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {2401, 2389, 2300, 2181, 2390, 2310, 2445}

$$\frac{h2^{-n}(e+fx)^2 e^{-\frac{2a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1\right.}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```


```
[Out] (3^(-1 - n)*h^2*(e + f*x)^3*Gamma[1 + n, (-3*(a + b*Log[c*(d*(e + f*x)^p)^q
]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((3*a)/(b*p*q))*f^3*(c*
(d*(e + f*x)^p)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^
n) + (h*(f*g - e*h)*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((2*a)/(b*p*q))
*f^3*(c*(d*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b
*p*q)))^n) + ((f*g - e*h)^2*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f
*x)^p)^q])/(b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^3
*(c*(d*(e + f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q
)))^n)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int (g+hx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx = \text{Subst}\left(\int (g+hx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{(fg-eh)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n}{f^2}+\frac{2h(fg-eh)(e+fx)}{\quad}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int(e+fx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx}{f^2}, cd^q(e+fx)^{pq}, c\left(d(\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\,\text{Subst}\left(\int x^2\left(a+b\log\left(cd^qx^{pq}\right)\right)^n\,dx, x, e+fx\right)}{f^3}, cd^q(e+fx)^{pq},\right.$$

$$= \text{Subst}\left(\frac{\left(h^2(e+fx)^3\left(cd^q(e+fx)^{pq}\right)^{-\frac{3}{pq}}\right)\text{Subst}\left(\int e^{\frac{3x}{pq}}(a+bx)^n\,dx, x, \log\right.}{f^3pq}\right.$$

$$= \frac{3^{-1-n}e^{-\frac{3a}{bpq}}h^2(e+fx)^3\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\Gamma\left(1+n,-\frac{3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right.}{f^3}$$

Mathematica [A] time = 1.03223, size = 326, normalized size = 0.75

$$2^{-n}3^{-n-1}(e+fx)e^{-\frac{3a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{3}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\left(3^{n+1}e^{\frac{a}{bpq}}(fg-eh)\left(c\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (3^(-1 - n)*(e + f*x)*(2^n*h^2*(e + f*x)^2*Gamma[1 + n, (-3*(a + b*Log[c*(d
*(e + f*x)^p)^q]))/(b*p*q)] + 3^(1 + n)*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e
+ f*x)^p)^q)^(1/(p*q))*(h*(e + f*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f
*x)^p)^q]))/(b*p*q)] + 2^n*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p)^q)^
(1/(p*q))*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]))*(a +
b*Log[c*(d*(e + f*x)^p)^q])^n)/(2^n*E^((3*a)/(b*p*q))*f^3*(c*(d*(e + f*x)^p
)^q)^(3/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Maple [F] time = 0.51, size = 0, normalized size = 0.

$$\int (hx+g)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((h*x+g)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(h^2x^2+2\,ghx+g^2\right)\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] integral((h^2*x^2 + 2*g*h*x + g^2)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^2 \left(b \log\left(\left(\left(fx+e\right)^p d\right)^q c\right) + a\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

3.515 $\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=281

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+}{}\right.}{f^2}$$

```
[Out] (2^(-1 - n)*h*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d
*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
 + ((f*g - e*h)*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(
b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^2*(c*(d*(e +
f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Rubi [A] time = 0.529045, antiderivative size = 281, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {2401, 2389, 2300, 2181, 2390, 2310, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+}{}\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```


```
[Out] (2^(-1 - n)*h*(e + f*x)^2*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*x)^p)^q])
)/(b*p*q)]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d
*(e + f*x)^p)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
 + ((f*g - e*h)*(e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(
b*p*q))]*(a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f^2*(c*(d*(e +
f*x)^p)^q)^(1/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```


Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2310

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_)*((d_.)*(x_))^(m_.), x_Symbol
] :> Dist[(d*x)^(m + 1)/(d*n*(c*x^n)^((m + 1)/n)), Subst[Int[E^(((m + 1)*x)
/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[{a, b, c, d, m, n, p}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\begin{aligned}
\int (g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx &= \text{Subst}\left(\int (g+hx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.\\
&= \text{Subst}\left(\int\left(\frac{(fg-eh)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n}{f}+\frac{h(e+fx)\left(a+b\log\left(\right.\right.}{f}\right.\right.\\
&= \text{Subst}\left(\frac{h\int (e+fx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n\,dx}{f}, cd^q(e+fx)^{pq}, c\left(d(e+\right.\right.\\
&= \text{Subst}\left(\frac{h\,\text{Subst}\left(\int x\left(a+b\log\left(cd^qx^{pq}\right)\right)^n\,dx, x, e+fx\right)}{f^2}, cd^q(e+fx)^{pq}, c\left(\right.\right.\\
&= \text{Subst}\left(\frac{\left(h(e+fx)^2\left(cd^q(e+fx)^{pq}\right)^{-\frac{2}{pq}}\right)\text{Subst}\left(\int e^{\frac{2x}{pq}}(a+bx)^n\,dx, x, \log\left(c\right.\right.}{f^2pq}\right.\\
&= \frac{2^{-1-n}e^{-\frac{2a}{bpq}}h(e+fx)^2\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\Gamma\left(1+n,-\frac{2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{bpq}\right)}{f^2}
\end{aligned}$$

Mathematica [A] time = 0.350227, size = 227, normalized size = 0.81

$$\frac{2^{-n-1}(e+fx)e^{-\frac{2a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{2}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\left(2^{n+1}e^{\frac{a}{bpq}}(fg-eh)\left(c\left(d(e+\right.\right.\right.}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] (2^(-1 - n)*(e + f*x)*(h*(e + f*x)*Gamma[1 + n, (-2*(a + b*Log[c*(d*(e + f*
x)^p)^q]))/(b*p*q)] + 2^(1 + n)*E^(a/(b*p*q))*(f*g - e*h)*(c*(d*(e + f*x)^p
)^q)^(1/(p*q))*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))])*(
a + b*Log[c*(d*(e + f*x)^p)^q])^n)/(E^((2*a)/(b*p*q))*f^2*(c*(d*(e + f*x)^p
)^q)^(2/(p*q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Maple [F] time = 0.308, size = 0, normalized size = 0.

$$\int (hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((h*x+g)*(a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(hx+g\right)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] integral((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x+g)*(a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

3.516 $\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\,dx$

Optimal. Leaf size=131

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d(e+\cdots}{bpq}\right.}{f}$$

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Rubi [A] time = 0.151447, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2389, 2300, 2181, 2445}

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log(c(d(e+\cdots}{bpq}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2300

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_), x_Symbol] :> Dist[x/(n*(c*x
^n)^(1/n)), Subst[Int[E^(x/n)*(a + b*x)^p, x], x, Log[c*x^n]], x] /; FreeQ[
{a, b, c, n, p}, x]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n dx = \text{Subst}\left(\int \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^n dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\text{Subst}\left(\int \left(a+b\log\left(cd^q x^{pq}\right)\right)^n dx, x, e+fx\right)}{f}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q$$

$$= \text{Subst}\left(\frac{\left((e+fx)\left(cd^q(e+fx)^{pq}\right)^{-\frac{1}{pq}}\right)\text{Subst}\left(\int e^{\frac{x}{pq}}(a+bx)^n dx, x, \log\left(cd^q(e+fx)\right.\right.}{fpq}\right.$$

$$= \frac{e^{-\frac{a}{bpq}}(e+fx)\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\Gamma\left(1+n,-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{f}$$

Mathematica [A] time = 0.121365, size = 131, normalized size = 1.

$$\frac{(e+fx)e^{-\frac{a}{bpq}}\left(c\left(d(e+fx)^p\right)^q\right)^{-\frac{1}{pq}}\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n\left(-\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{bpq}\right)^{-n}\text{Gamma}\left(n+1,-\frac{a+b\log\left(c\left(d(e+fx)^p\right.\right.}{bpq}\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n,x]
```

```
[Out] ((e + f*x)*Gamma[1 + n, -((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q))]*(a + b
*Log[c*(d*(e + f*x)^p)^q])^n)/(E^(a/(b*p*q))*f*(c*(d*(e + f*x)^p)^q)^(1/(p*
q))*(-((a + b*Log[c*(d*(e + f*x)^p)^q])/(b*p*q)))^n)
```

Maple [F] time = 0.278, size = 0, normalized size = 0.

$$\int \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="maxima")
```

[Out] Exception raised: RuntimeError

Fricas [A] time = 2.02874, size = 192, normalized size = 1.47

$$\frac{e^{\left(-\frac{bnpq\log\left(-\frac{1}{bpq}\right)+bq\log(d)+b\log(c)+a}{bpq}\right)}\Gamma\left(n+1,-\frac{bpq\log(fx+e)+bq\log(d)+b\log(c)+a}{bpq}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="fricas")
```

```
[Out] e^(-(b*n*p*q*log(-1/(b*p*q)) + b*q*log(d) + b*log(c) + a)/(b*p*q))*gamma(n
+ 1, -(b*p*q*log(f*x + e) + b*q*log(d) + b*log(c) + a)/(b*p*q))/f
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**n,x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n,x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^n, x)
```

3.517 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx},x\right)$$

```
[Out] Unintegrable[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

Rubi [A] time = 0.0622584, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x),x]
```

```
[Out] Defer[Int][(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx=\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$$

Mathematica [A] time = 0.350357, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^n}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x),x]
```

```
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^n/(g + h*x), x]
```

Maple [A] time = 0.678, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^n}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{n}}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)^n/(h*x + g), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)^{n}}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**n/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**n/(g + h*x), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{n}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^n/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^n/(h*x + g), x)
```

3.518 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx^2}\,dx$

Optimal. Leaf size=249

$$-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{h}(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)}{2\sqrt{-g}\sqrt{h}}+\frac{bpq\text{PolyLog}\left(2,\frac{\sqrt{h}(e+fx)}{e\sqrt{h}+f\sqrt{-g}}\right)}{2\sqrt{-g}\sqrt{h}}+\frac{\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2\sqrt{-g}\sqrt{h}}-\frac{\log\left(\frac{f(\sqrt{-}}{f\sqrt{-}}\right.}{}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-g
] + e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h]) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h
]) - (b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))])/(2
*Sqrt[-g]*Sqrt[h]) + (b*p*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*
Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h])
```

Rubi [A] time = 0.503994, antiderivative size = 249, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2409, 2394, 2393, 2391, 2445}

$$-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{h}(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)}{2\sqrt{-g}\sqrt{h}}+\frac{bpq\text{PolyLog}\left(2,\frac{\sqrt{h}(e+fx)}{e\sqrt{h}+f\sqrt{-g}}\right)}{2\sqrt{-g}\sqrt{h}}+\frac{\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2\sqrt{-g}\sqrt{h}}-\frac{\log\left(\frac{f(\sqrt{-}}{f\sqrt{-}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x^2),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-g
] + e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h]) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h
]) - (b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))])/(2
*Sqrt[-g]*Sqrt[h]) + (b*p*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*
Sqrt[h])])/(2*Sqrt[-g]*Sqrt[h])
```

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{\sqrt{-g}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{2g\left(\sqrt{-g}-\sqrt{h}x\right)} + \frac{\sqrt{-g}\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{2g\left(\sqrt{-g}+\sqrt{h}x\right)}\right) d\ldots\right.$$

$$= -\text{Subst}\left(\frac{\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{-g}-\sqrt{h}x}\,dx}{2\sqrt{-g}}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{\int \frac{a+b\log\ldots}{\sqrt{\ldots}}}{2\ldots}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\sqrt{h}} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\ldots\right.}{2\sqrt{-g}\sqrt{h}}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\sqrt{h}} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\ldots\right.}{2\sqrt{-g}\sqrt{h}}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}x\right)}{f\sqrt{-g}+e\sqrt{h}}\right)}{2\sqrt{-g}\sqrt{h}} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\ldots\right.}{2\sqrt{-g}\sqrt{h}}$$

Mathematica [A] time = 0.137004, size = 190, normalized size = 0.76

$$\frac{-bpq\text{PolyLog}\left(2,-\frac{\sqrt{h}(e+fx)}{f\sqrt{-g}-e\sqrt{h}}\right)+bpq\text{PolyLog}\left(2,\frac{\sqrt{h}(e+fx)}{e\sqrt{h}+f\sqrt{-g}}\right)+\left(\log\left(\frac{f\left(\sqrt{-g}-\sqrt{h}x\right)}{e\sqrt{h}+f\sqrt{-g}}\right)-\log\left(\frac{f\left(\sqrt{-g}+\sqrt{h}x\right)}{f\sqrt{-g}-e\sqrt{h}}\right)\right)\left(a+b\log\left(c\left(d(\ldots\right.\right.\right.}{2\sqrt{-g}\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x^2),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*(Log[(f*(Sqrt[-g] - Sqrt[h]*x))/(f*Sqrt[-
g] + e*Sqrt[h])] - Log[(f*(Sqrt[-g] + Sqrt[h]*x))/(f*Sqrt[-g] - e*Sqrt[h])]
) - b*p*q*PolyLog[2, -((Sqrt[h]*(e + f*x))/(f*Sqrt[-g] - e*Sqrt[h]))] + b*p
*q*PolyLog[2, (Sqrt[h]*(e + f*x))/(f*Sqrt[-g] + e*Sqrt[h])])/(2*Sqrt[-g]*Sq
rt[h])
```

Maple [F] time = 0.731, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)}{hx^{2}+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx^{2}+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="fricas")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x^2 + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx^{2}+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x^2 + g), x)
```

3.519 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2+hx^2}}\,dx$

Optimal. Leaf size=335

$$-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{e\sqrt{h}-\sqrt{e^2h+2f^2}}\right)}{\sqrt{h}}-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}\right)}{\sqrt{h}}+\frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}}-\frac{b}{}$$

```
[Out] (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]^2)/(2*Sqrt[h]) - (b*p*q*ArcSinh[(Sqrt[h
]*x)/Sqrt[2]]*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h]
 - Sqrt[2*f^2 + e^2*h])])/Sqrt[h] - (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*Log
[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e
^2*h])])/Sqrt[h] + (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/Sqrt[h] - (b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2
]]*f)/(e*Sqrt[h] - Sqrt[2*f^2 + e^2*h]))])/Sqrt[h] - (b*p*q*PolyLog[2, -((S
qrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))
])/Sqrt[h]
```

Rubi [A] time = 0.831641, antiderivative size = 335, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3, Rules used = {215, 2404, 12, 5799, 5561, 2190, 2279, 2391, 2445}

$$-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{e\sqrt{h}-\sqrt{e^2h+2f^2}}\right)}{\sqrt{h}}-\frac{bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}\right)}{\sqrt{h}}+\frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}}-\frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[2 + h*x^2],x]
```


```
[Out] (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]^2)/(2*Sqrt[h]) - (b*p*q*ArcSinh[(Sqrt[h
]*x)/Sqrt[2]]*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h]
 - Sqrt[2*f^2 + e^2*h])])/Sqrt[h] - (b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*Log
[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e
^2*h])])/Sqrt[h] + (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(a + b*Log[c*(d*(e + f*x)^
p)^q]))/Sqrt[h] - (b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2
]]*f)/(e*Sqrt[h] - Sqrt[2*f^2 + e^2*h]))])/Sqrt[h] - (b*p*q*PolyLog[2, -((S
qrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))
])/Sqrt[h]
```


Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2+hx^2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{2+hx^2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left((bfpq)\int \frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}{\sqrt{h}(e+fx)}\,dx, cd^q(e\right.$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left(\frac{(bfpq)\int \frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}{e+fx}\,dx}{\sqrt{h}}, cd^q(e+\right.$$

$$= \frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left(\frac{(bfpq)\,\text{Subst}\left(\int \frac{x\cosh(x)}{\frac{e\sqrt{h}}{\sqrt{2}}+f\sinh(x)}\,dx,\right.}{\sqrt{h}}\right.$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)^2}{2\sqrt{h}} + \frac{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}} - \text{Subst}\left(\frac{(bfpq)\,\text{Sub}}{}\right.$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\text{lo}}{}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\text{lo}}{}$$

$$= \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)^2}{2\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\log\left(1+\frac{\sqrt{2}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}f}{e\sqrt{h}-\sqrt{2f^2+e^2h}}\right)}{\sqrt{h}} - \frac{bpq\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\text{lo}}{}$$

Mathematica [A] time = 0.223978, size = 284, normalized size = 0.85

$$\frac{-2bpq\text{PolyLog}\left(2,\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}-e\sqrt{h}}\right) - 2bpq\text{PolyLog}\left(2,-\frac{\sqrt{2}fe^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)}}{\sqrt{e^2h+2f^2}+e\sqrt{h}}\right) + \sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{2}}\right)\left(2a+2b\log\left(c\left(d(e+fx)^p\right)^q\right) - \right.}{2\sqrt{h}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[2 + h*x^2],x]
```

```
[Out] (ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*(2*a + b*p*q*ArcSinh[(Sqrt[h]*x)/Sqrt[2]] - 2
*b*p*q*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(e*Sqrt[h] - Sqrt
[2*f^2 + e^2*h])] - 2*b*p*q*Log[1 + (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]
*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h])] + 2*b*Log[c*(d*(e + f*x)^p)^q]) - 2*
b*p*q*PolyLog[2, (Sqrt[2]*E^ArcSinh[(Sqrt[h]*x)/Sqrt[2]]*f)/(-(e*Sqrt[h]) +
 Sqrt[2*f^2 + e^2*h])] - 2*b*p*q*PolyLog[2, -((Sqrt[2]*E^ArcSinh[(Sqrt[h]*x
)/Sqrt[2]]*f)/(e*Sqrt[h] + Sqrt[2*f^2 + e^2*h]))])/(2*Sqrt[h])
```

Maple [F] time = 0.662, size = 0, normalized size = 0.

$$\int (a+b\ln \left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right))\frac{1}{\sqrt{hx^{2}+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx^{2}+2}\,b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\sqrt{hx^{2}+2}\,a}{hx^{2}+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x^2 + 2)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x^2 + 2)*a)/(
h*x^2 + 2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)}{\sqrt{hx^{2} + 2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(h*x**2 + 2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(\left(fx + e\right)^{p} d\right)^{q} c\right) + a}{\sqrt{hx^{2} + 2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x^2 + 2), x)
```

3.520 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx^2}}\,dx$

Optimal. Leaf size=515

$$-\frac{b\sqrt{g}pq\sqrt{\frac{hx^2}{g}+1}\text{PolyLog}\left(2,-\frac{f\sqrt{g}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}}{e\sqrt{h}-\sqrt{e^2h+f^2g}}\right)}{\sqrt{h}\sqrt{g+hx^2}}-\frac{b\sqrt{g}pq\sqrt{\frac{hx^2}{g}+1}\text{PolyLog}\left(2,-\frac{f\sqrt{g}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}}{\sqrt{e^2h+f^2g}+e\sqrt{h}}\right)}{\sqrt{h}\sqrt{g+hx^2}}+\frac{\sqrt{g}\sqrt{\frac{hx^2}{g}+1}\sinh}{}$$

```
[Out] (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]^2)/(2*Sqrt[
h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x
)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h] -
Sqrt[f^2*g + e^2*h])])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 +
(h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt
[g]]*f*Sqrt[g])/(e*Sqrt[h] + Sqrt[f^2*g + e^2*h])])/(Sqrt[h]*Sqrt[g + h*x^2
]) + (Sqrt[g]*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (
h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h
] - Sqrt[f^2*g + e^2*h]))])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt
[1 + (h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*
Sqrt[h] + Sqrt[f^2*g + e^2*h]))])/(Sqrt[h]*Sqrt[g + h*x^2])
```

Rubi [A] time = 1.2005, antiderivative size = 515, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2406, 215, 2404, 12, 5799, 5561, 2190, 2279, 2391, 2445}

$$-\frac{b\sqrt{g}pq\sqrt{\frac{hx^2}{g}+1}\text{PolyLog}\left(2,-\frac{f\sqrt{g}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}}{e\sqrt{h}-\sqrt{e^2h+f^2g}}\right)}{\sqrt{h}\sqrt{g+hx^2}}-\frac{b\sqrt{g}pq\sqrt{\frac{hx^2}{g}+1}\text{PolyLog}\left(2,-\frac{f\sqrt{g}e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}}{\sqrt{e^2h+f^2g}+e\sqrt{h}}\right)}{\sqrt{h}\sqrt{g+hx^2}}+\frac{\sqrt{g}\sqrt{\frac{hx^2}{g}+1}\sinh}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2],x]
```


```
[Out] (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]^2)/(2*Sqrt[
h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x
)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h] -
Sqrt[f^2*g + e^2*h])])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 +
(h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*Log[1 + (E^ArcSinh[(Sqrt[h]*x)/Sqrt
[g]]*f*Sqrt[g])/(e*Sqrt[h] + Sqrt[f^2*g + e^2*h])])/(Sqrt[h]*Sqrt[g + h*x^2
]) + (Sqrt[g]*Sqrt[1 + (h*x^2)/g]*ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt[1 + (
h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*Sqrt[h
] - Sqrt[f^2*g + e^2*h]))])/(Sqrt[h]*Sqrt[g + h*x^2]) - (b*Sqrt[g]*p*q*Sqrt
[1 + (h*x^2)/g]*PolyLog[2, -((E^ArcSinh[(Sqrt[h]*x)/Sqrt[g]]*f*Sqrt[g])/(e*
Sqrt[h] + Sqrt[f^2*g + e^2*h]))])/(Sqrt[h]*Sqrt[g + h*x^2])
```


Rule 2406

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> Dist[Sqrt[1 + (g*x^2)/f]/Sqrt[f + g*x^2], Int[(a + b*
Log[c*(d + e*x)^n])/Sqrt[1 + (g*x^2)/f], x], x] /; FreeQ[{a, b, c, d, e, f,
```

```
 g, n}, x] &&  !GtQ[f, 0]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 5799

```
Int[((a_.) + ArcSinh[(c_.)*(x_)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbo
l] :> Subst[Int[((a + b*x)^n*Cosh[x])/(c*d + e*Sinh[x]), x], x, ArcSinh[c*x
]] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 5561

```
Int[(Cosh[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin
h[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(e + f*x)^(m + 1)/(b*f*(m + 1)),
 x] + (Int[((e + f*x)^m*E^(c + d*x))/(a - Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x] + Int[((e + f*x)^m*E^(c + d*x))/(a + Rt[a^2 + b^2, 2] + b*E^(c + d*x))
, x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 + b^2, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g+hx^2}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g+hx^2}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\sqrt{1+\frac{hx^2}{g}}\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{1+\frac{hx^2}{g}}}\,dx}{\sqrt{g+hx^2}}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\left(\frac{\left(bfpq\sqrt{1+\frac{hx^2}{g}}\right)\int}{\sqrt{g+}}\right.$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\left(\frac{\left(bf\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\right.}{\sqrt{h}\sqrt{g+}}\right.$$

$$= \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{\sqrt{h}\sqrt{g+hx^2}} - \text{Subst}\left(\frac{\left(bf\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\right.}{}\right.$$

$$= \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} + \frac{\sqrt{g}\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

$$= \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\log\left(1+\frac{e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}f\sqrt{}}{e\sqrt{h}-\sqrt{f^2g+e^2}}\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

$$= \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\log\left(1+\frac{e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}f\sqrt{}}{e\sqrt{h}-\sqrt{f^2g+e^2}}\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

$$= \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)^2}{2\sqrt{h}\sqrt{g+hx^2}} - \frac{b\sqrt{g}pq\sqrt{1+\frac{hx^2}{g}}\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)\log\left(1+\frac{e^{\sinh^{-1}\left(\frac{\sqrt{h}x}{\sqrt{g}}\right)}f\sqrt{}}{e\sqrt{h}-\sqrt{f^2g+e^2}}\right.}{\sqrt{h}\sqrt{g+hx^2}}$$

Mathematica [F] time = 3.59329, size = 0, normalized size = 0.

$$\int \frac{a + b \log \left(c \left(d(e + fx)^p\right)^q\right)}{\sqrt{g + hx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2],x]
```

```
[Out] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/Sqrt[g + h*x^2], x]
```

Maple [F] time = 0.664, size = 0, normalized size = 0.

$$\int \left(a + b \ln \left(c \left(d \left(fx + e\right)^p\right)^q\right)\right) \frac{1}{\sqrt{hx^2 + g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="maxima
")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{hx^2 + g}b \log \left(\left(\left(fx + e\right)^p d\right)^q c\right) + \sqrt{hx^2 + g}a}{hx^2 + g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral((sqrt(h*x^2 + g)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h*x^2 + g)*a)/(
h*x^2 + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)}{\sqrt{g + hx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x**2+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/sqrt(g + h*x**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\log\left(\left(\left(fx + e\right)^{p}d\right)^{q}c\right) + a}{\sqrt{hx^{2} + g}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x^2+g)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/sqrt(h*x^2 + g), x)
```

3.521 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx$

Optimal. Leaf size=287

$$\frac{ibpq\mathrm{PolyLog}\left(2,-\frac{2fe^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{-\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{ibpq\mathrm{PolyLog}\left(2,-\frac{2fe^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{bpq}{}$$

```
[Out] ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (2*E^(I*
ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h - (b*p*q*ArcSin[(h*
x)/2]*Log[1 + (2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2])])
/h + (ArcSin[(h*x)/2]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (I*b*p*q*PolyLo
g[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h + (I*
b*p*q*PolyLog[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2
])])/h
```

Rubi [A] time = 1.05943, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {216, 2405, 4741, 4521, 2190, 2279, 2391, 2445}

$$\frac{ibpq\mathrm{PolyLog}\left(2,-\frac{2fe^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{-\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{ibpq\mathrm{PolyLog}\left(2,-\frac{2fe^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{\sqrt{4f^2-e^2h^2}+ieh}\right)}{h}+\frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{bpq}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[2 - h*x]*Sqrt[2 + h*x]),x]
```

```
[Out] ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (2*E^(I*
ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h - (b*p*q*ArcSin[(h*
x)/2]*Log[1 + (2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2])])
/h + (ArcSin[(h*x)/2]*(a + b*Log[c*(d*(e + f*x)^p)^q]))/h + (I*b*p*q*PolyLo
g[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h - Sqrt[4*f^2 - e^2*h^2])])/h + (I*
b*p*q*PolyLog[2, (-2*E^(I*ArcSin[(h*x)/2])*f)/(I*e*h + Sqrt[4*f^2 - e^2*h^2
])])/h
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2405

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> With[{u = IntHide[1/Sqrt[
f1*f2 + g1*g2*x^2], x]}, Simp[u*(a + b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n
, Int[SimplifyIntegrand[u/(d + e*x), x], x], x]] /; FreeQ[{a, b, c, d, e, f
1, g1, f2, g2, n}, x] && EqQ[f2*g1 + f1*g2, 0] && GtQ[f1, 0] && GtQ[f2, 0]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{2-hx}\sqrt{2+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left((bfpq)\int \frac{\sin^{-1}\left(\frac{hx}{2}\right)}{eh+fhx}\,dx, cd^q(e+\right.$$

$$= \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left((bfpq)\,\text{Subst}\left(\int \frac{x\cos(x)}{\frac{eh^2}{2}+fh\sin(x\right.\right.$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} + \frac{\sin^{-1}\left(\frac{hx}{2}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h} - \text{Subst}\left((ibfpq)\,\text{Subs}\right.$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\right.}{h}$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\right.}{h}$$

$$= \frac{ibpq\sin^{-1}\left(\frac{hx}{2}\right)^2}{2h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\frac{2e^{i\sin^{-1}\left(\frac{hx}{2}\right)}f}{ieh-\sqrt{4f^2-e^2h^2}}\right)}{h} - \frac{bpq\sin^{-1}\left(\frac{hx}{2}\right)\log\left(1+\right.}{h}$$

Mathematica [A] time = 0.0292965, size = 316, normalized size = 1.1

$$\frac{ibpq\text{PolyLog}\left(2,\frac{2ife^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{eh-i\sqrt{4f^2-e^2h^2}}\right)}{h} + \frac{ibpq\text{PolyLog}\left(2,\frac{2ife^{i\sin^{-1}\left(\frac{hx}{2}\right)}}{eh+i\sqrt{4f^2-e^2h^2}}\right)}{h} + \frac{a\sin^{-1}\left(\frac{hx}{2}\right)}{h} + \frac{b\sin^{-1}\left(\frac{hx}{2}\right)\log\left(c\left(d(e+fx)^p\right)^q\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[2 - h*x]*Sqrt[2 + h*x]),x]
```

```
[Out] (a*ArcSin[(h*x)/2])/h + ((I/2)*b*p*q*ArcSin[(h*x)/2]^2)/h - (b*p*q*ArcSin[(
h*x)/2]*Log[1 + (E^(I*ArcSin[(h*x)/2])*f*h)/((I/2)*e*h^2 - (h*Sqrt[4*f^2 -
e^2*h^2])/2)])/h - (b*p*q*ArcSin[(h*x)/2]*Log[1 + (E^(I*ArcSin[(h*x)/2])*f*
h)/((I/2)*e*h^2 + (h*Sqrt[4*f^2 - e^2*h^2])/2)])/h + (b*ArcSin[(h*x)/2]*Log
[c*(d*(e + f*x)^p)^q])/h + (I*b*p*q*PolyLog[2, ((2*I)*E^(I*ArcSin[(h*x)/2])
*f)/(e*h - I*Sqrt[4*f^2 - e^2*h^2])])/h + (I*b*p*q*PolyLog[2, ((2*I)*E^(I*A
rcSin[(h*x)/2])*f)/(e*h + I*Sqrt[4*f^2 - e^2*h^2])])/h
```

Maple [F] time = 0.962, size = 0, normalized size = 0.

$$\int (a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right))\frac{1}{\sqrt{-hx+2}}\frac{1}{\sqrt{hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+\log\left(c\right)+\log\left(d^{q}\right)}{\sqrt{hx+2}\sqrt{-hx+2}}\,dx+\frac{a\arcsin\left(\frac{h^{2}x}{2\sqrt{h^{2}}}\right)}{\sqrt{h^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="maxima")
```

```
[Out] b*integrate((log(((f*x + e)^p)^q) + log(c) + log(d^q))/(sqrt(h*x + 2)*sqrt(
-h*x + 2)), x) + a*arcsin(1/2*h^2*x/sqrt(h^2))/sqrt(h^2)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{hx+2}\sqrt{-hx+2}b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\sqrt{hx+2}\sqrt{-hx+2}a}{h^{2}x^{2}-4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="fricas")
```

```
[Out] integral(-(sqrt(h*x + 2)*sqrt(-h*x + 2)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h
*x + 2)*sqrt(-h*x + 2)*a)/(h^2*x^2 - 4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\sqrt{-hx+2}\sqrt{hx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(-h*x+2)**(1/2)/(h*x+2)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(sqrt(-h*x + 2)*sqrt(h*x + 2)),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b \log \left(\left(\left(fx + e \right)^{p} d \right)^{q} c \right) + a}{\sqrt{hx + 2}\sqrt{-hx + 2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+2)^(1/2)/(h*x+2)^(1/2),x, algo
rithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(sqrt(h*x + 2)*sqrt(-h*x + 2)),
x)
```

3.522 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=519

$$\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{PolyLog}\left(2,-\frac{fge^{i\sin^{-1}\left(\frac{hx}{g}\right)}}{-\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{PolyLog}\left(2,-\frac{fge^{i\sin^{-1}\left(\frac{hx}{g}\right)}}{\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\sqrt{g+hx}}+\frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)(}{h\sqrt{g-}}$$

```
[Out] ((I/2)*b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]^2)/(h*Sqrt[g - h*x]*
Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[1 + (
E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt[g -
h*x]*Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[
1 + (E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt
[g - h*x]*Sqrt[g + h*x]) + (g*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*(a +
b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*S
qrt[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sq
rt[f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*Sqrt
[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[
f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x])
```

Rubi [A] time = 1.4112, antiderivative size = 519, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2407, 216, 2404, 12, 4741, 4521, 2190, 2279, 2391, 2445}

$$\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{PolyLog}\left(2,-\frac{fge^{i\sin^{-1}\left(\frac{hx}{g}\right)}}{-\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\sqrt{g+hx}}+\frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\,\text{PolyLog}\left(2,-\frac{fge^{i\sin^{-1}\left(\frac{hx}{g}\right)}}{\sqrt{f^2g^2-e^2h^2}+ieh}\right)}{h\sqrt{g-hx}\sqrt{g+hx}}+\frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\,\sin^{-1}\left(\frac{hx}{g}\right)(}{h\sqrt{g-}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[g - h*x]*Sqrt[g + h*x]),x]
```


```
[Out] ((I/2)*b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]^2)/(h*Sqrt[g - h*x]*
Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[1 + (
E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt[g -
h*x]*Sqrt[g + h*x]) - (b*g*p*q*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*Log[
1 + (E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[f^2*g^2 - e^2*h^2])])/(h*Sqrt
[g - h*x]*Sqrt[g + h*x]) + (g*Sqrt[1 - (h^2*x^2)/g^2]*ArcSin[(h*x)/g]*(a +
b*Log[c*(d*(e + f*x)^p)^q]))/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*S
qrt[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h - Sq
rt[f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x]) + (I*b*g*p*q*Sqrt
[1 - (h^2*x^2)/g^2]*PolyLog[2, -((E^(I*ArcSin[(h*x)/g])*f*g)/(I*e*h + Sqrt[
f^2*g^2 - e^2*h^2]))])/(h*Sqrt[g - h*x]*Sqrt[g + h*x])
```


Rule 2407

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/(Sqrt[(f1_) + (g1_
.)*(x_)]*Sqrt[(f2_) + (g2_.)*(x_)]), x_Symbol] :> Dist[Sqrt[1 + (g1*g2*x^2)
/(f1*f2)]/(Sqrt[f1 + g1*x]*Sqrt[f2 + g2*x]), Int[(a + b*Log[c*(d + e*x)^n])
/Sqrt[1 + (g1*g2*x^2)/(f1*f2)], x], x] /; FreeQ[{a, b, c, d, e, f1, g1, f2,
 g2, n}, x] && EqQ[f2*g1 + f1*g2, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2404

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/Sqrt[(f_) + (g_.)*
(x_)^2], x_Symbol] :> With[{u = IntHide[1/Sqrt[f + g*x^2], x]}, Simp[u*(a +
 b*Log[c*(d + e*x)^n]), x] - Dist[b*e*n, Int[SimplifyIntegrand[u/(d + e*x),
 x], x], x]] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && GtQ[f, 0]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\frac{\sqrt{1-\frac{h^2x^2}{g^2}}\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{\sqrt{1-\frac{h^2x^2}{g^2}}}\,dx}{\sqrt{g-hx}\sqrt{g+hx}}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfpq\sqrt{1-\frac{h^2x^2}{g^2}}\right)\int \frac{g\sin \ldots}{eh \ldots}}{\sqrt{g-hx}\sqrt{g+h \ldots}} \ldots\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfgpq\sqrt{1-\frac{h^2x^2}{g^2}}\right)\int \frac{\sin \ldots}{e \ldots}}{\sqrt{g-hx}\sqrt{g+h \ldots}} \ldots\right.$$

$$= \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{Subst}\left(\frac{\left(bfgpq\sqrt{1-\frac{h^2x^2}{g^2}}\right)\text{Sub}\ldots}{\sqrt{g \ldots}} \ldots\right.$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} + \frac{g\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \text{S}\ldots$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}fg}{ieh-\sqrt{f^2g^2-e^2h^2}}\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bg \ldots}{\ldots}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}fg}{ieh-\sqrt{f^2g^2-e^2h^2}}\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bg \ldots}{\ldots}$$

$$= \frac{ibgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)^2}{2h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bgpq\sqrt{1-\frac{h^2x^2}{g^2}}\sin^{-1}\left(\frac{hx}{g}\right)\log\left(1+\frac{e^{i\sin^{-1}\left(\frac{hx}{g}\right)}fg}{ieh-\sqrt{f^2g^2-e^2h^2}}\right)}{h\sqrt{g-hx}\sqrt{g+hx}} - \frac{bg \ldots}{\ldots}$$

Mathematica [B] time = 4.46077, size = 1083, normalized size = 2.09

$$\frac{\tan^{-1}\left(\frac{hx}{\sqrt{g-hx}\sqrt{g+hx}}\right)\left(a-bpq\log(e+fx)+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{ibpq\sqrt{g-hx}\sqrt{\frac{g+hx}{g-hx}}\left(\log^2\left(i-\sqrt{\frac{g+hx}{g-hx}}\right)+2\log(e\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(Sqrt[g - h*x]*Sqrt[g + h*x]),x]
```

```
[Out] (ArcTan[(h*x)/(Sqrt[g - h*x]*Sqrt[g + h*x])]*(a - b*p*q*Log[e + f*x] + b*Lo
g[c*(d*(e + f*x)^p)^q]))/h - ((I/2)*b*p*q*Sqrt[g - h*x]*Sqrt[(g + h*x)/(g -
 h*x)]*(2*Log[e + f*x]*Log[I - Sqrt[(g + h*x)/(g - h*x)]] + Log[I - Sqrt[(g
 + h*x)/(g - h*x)]]^2 + 2*Log[I - Sqrt[(g + h*x)/(g - h*x)]]*Log[(1 - I*Sqr
t[(g + h*x)/(g - h*x)])/2] - 2*Log[e + f*x]*Log[I + Sqrt[(g + h*x)/(g - h*x
)]] - 2*Log[(1 + I*Sqrt[(g + h*x)/(g - h*x)])/2]*Log[I + Sqrt[(g + h*x)/(g
- h*x)]] - Log[I + Sqrt[(g + h*x)/(g - h*x)]]^2 - 2*Log[I - Sqrt[(g + h*x)/
(g - h*x)]]*Log[(Sqrt[f*g - e*h] - Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)
])/(Sqrt[f*g - e*h] - I*Sqrt[f*g + e*h])] + 2*Log[I + Sqrt[(g + h*x)/(g - h
*x)]]*Log[(Sqrt[f*g - e*h] - Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sq
rt[f*g - e*h] + I*Sqrt[f*g + e*h])] + 2*Log[I + Sqrt[(g + h*x)/(g - h*x)]]*
Log[(Sqrt[f*g - e*h] + Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sqrt[f*g
 - e*h] - I*Sqrt[f*g + e*h])] - 2*Log[I - Sqrt[(g + h*x)/(g - h*x)]]*Log[(S
qrt[f*g - e*h] + Sqrt[f*g + e*h]*Sqrt[(g + h*x)/(g - h*x)])/(Sqrt[f*g - e*h
] + I*Sqrt[f*g + e*h])] - 2*PolyLog[2, 1/2 - (I/2)*Sqrt[(g + h*x)/(g - h*x)
]] + 2*PolyLog[2, 1/2 + (I/2)*Sqrt[(g + h*x)/(g - h*x)]] + 2*PolyLog[2, (Sq
rt[f*g + e*h]*(1 - I*Sqrt[(g + h*x)/(g - h*x)]))/(I*Sqrt[f*g - e*h] + Sqrt[
f*g + e*h])] - 2*PolyLog[2, (Sqrt[f*g + e*h]*(1 + I*Sqrt[(g + h*x)/(g - h*x
)]))/((-I)*Sqrt[f*g - e*h] + Sqrt[f*g + e*h])] - 2*PolyLog[2, (Sqrt[f*g + e
*h]*(1 + I*Sqrt[(g + h*x)/(g - h*x)]))/(I*Sqrt[f*g - e*h] + Sqrt[f*g + e*h]
)] + 2*PolyLog[2, (Sqrt[f*g + e*h]*(I + Sqrt[(g + h*x)/(g - h*x)]))/(Sqrt[f
*g - e*h] + I*Sqrt[f*g + e*h])]))/(h*Sqrt[g + h*x])
```

Maple [F] time = 1.06, size = 0, normalized size = 0.

$$\int (a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right))\frac{1}{\sqrt{-hx+g}}\frac{1}{\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\sqrt{hx+g}\sqrt{-hx+g}b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+\sqrt{hx+g}\sqrt{-hx+g}a}{h^{2}x^{2}-g^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="fricas")
```

```
[Out] integral(-(sqrt(h*x + g)*sqrt(-h*x + g)*b*log(((f*x + e)^p*d)^q*c) + sqrt(h
*x + g)*sqrt(-h*x + g)*a)/(h^2*x^2 - g^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{\sqrt{g-hx}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(-h*x+g)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(sqrt(g - h*x)*sqrt(g + h*x)),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\sqrt{hx+g}\sqrt{-hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(-h*x+g)^(1/2)/(h*x+g)^(1/2),x, algo
rithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(sqrt(h*x + g)*sqrt(-h*x + g)),
x)
```

3.523 $\int \frac{(i+jx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx$

Optimal. Leaf size=427

$$\frac{bpq(hi-gj)^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^4}+\frac{(i+jx)^2(hi-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h^2}+\frac{(hi-gj)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\right.}{h^4}$$

```
[Out] (a*j*(h*i - g*j)^2*x)/h^3 - (b*j*(f*i - e*j)^2*p*q*x)/(3*f^2*h) - (b*j*(f*i
 - e*j)*(h*i - g*j)*p*q*x)/(2*f*h^2) - (b*j*(h*i - g*j)^2*p*q*x)/h^3 - (b*(
f*i - e*j)*p*q*(i + j*x)^2)/(6*f*h) - (b*(h*i - g*j)*p*q*(i + j*x)^2)/(4*h^
2) - (b*p*q*(i + j*x)^3)/(9*h) - (b*(f*i - e*j)^3*p*q*Log[e + f*x])/(3*f^3*
h) - (b*(f*i - e*j)^2*(h*i - g*j)*p*q*Log[e + f*x])/(2*f^2*h^2) + (b*j*(h*i
 - g*j)^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^3) + ((h*i - g*j)*(i + j
*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h^2) + ((i + j*x)^3*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(3*h) + ((h*i - g*j)^3*(a + b*Log[c*(d*(e + f*x)^p)^q
])*Log[(f*(g + h*x))/(f*g - e*h)])/h^4 + (b*(h*i - g*j)^3*p*q*PolyLog[2, -(
(h*(e + f*x))/(f*g - e*h))])/h^4
```

Rubi [A] time = 0.816707, antiderivative size = 427, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43, 2445}

$$\frac{bpq(hi-gj)^3\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^4}+\frac{(i+jx)^2(hi-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h^2}+\frac{(hi-gj)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\right.}{h^4}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```


```
[Out] (a*j*(h*i - g*j)^2*x)/h^3 - (b*j*(f*i - e*j)^2*p*q*x)/(3*f^2*h) - (b*j*(f*i
 - e*j)*(h*i - g*j)*p*q*x)/(2*f*h^2) - (b*j*(h*i - g*j)^2*p*q*x)/h^3 - (b*(
f*i - e*j)*p*q*(i + j*x)^2)/(6*f*h) - (b*(h*i - g*j)*p*q*(i + j*x)^2)/(4*h^
2) - (b*p*q*(i + j*x)^3)/(9*h) - (b*(f*i - e*j)^3*p*q*Log[e + f*x])/(3*f^3*
h) - (b*(f*i - e*j)^2*(h*i - g*j)*p*q*Log[e + f*x])/(2*f^2*h^2) + (b*j*(h*i
 - g*j)^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^3) + ((h*i - g*j)*(i + j
*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h^2) + ((i + j*x)^3*(a + b*Log[c
*(d*(e + f*x)^p)^q]))/(3*h) + ((h*i - g*j)^3*(a + b*Log[c*(d*(e + f*x)^p)^q
])*Log[(f*(g + h*x))/(f*g - e*h)])/h^4 + (b*(h*i - g*j)^3*p*q*PolyLog[2, -(
(h*(e + f*x))/(f*g - e*h))])/h^4
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(523+jx)^3\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}dx = \text{Subst}\left(\int \frac{(523+jx)^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}dx, cd^q(e+fx)^{pq}, c\right.$$

$$= \text{Subst}\left(\int\left(\frac{j(523h-gj)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h^3}+\frac{(523h-gj)^3\left(\right.}{}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(523+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx}{h}, cd^q(e+fx)^{pq}, c\right.$$

$$= \frac{aj(523h-gj)^2x}{h^3}+\frac{(523h-gj)(523+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{2h^2}$$

$$= \frac{aj(523h-gj)^2x}{h^3}+\frac{(523h-gj)(523+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{2h^2}$$

$$= \frac{aj(523h-gj)^2x}{h^3}-\frac{bj(523f-ej)^2pqx}{3f^2h}-\frac{bj(523f-ej)(523h-gj)pqx}{2fh^2}$$

Mathematica [A] time = 0.686944, size = 386, normalized size = 0.9

$$\frac{36bf^3pq(hi-gj)^3\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)+f\left(hjx\left(6af^2\left(6g^2j^2-3ghj(6i+jx)+h^2\left(18i^2+9ijx+2j^2x^2\right)\right)-bpq\left(12e^2h^2j\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^3*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (6*b*e^2*h^2*j^2*(-9*f*h*i + 3*f*g*j + 2*e*h*j)*p*q*Log[e + f*x] + f*(h*j*x
*(6*a*f^2*(6*g^2*j^2 - 3*g*h*j*(6*i + j*x) + h^2*(18*i^2 + 9*i*j*x + 2*j^2*
x^2)) - b*p*q*(12*e^2*h^2*j^2 - 6*e*f*h*j*(9*h*i - 3*g*j + h*j*x) + f^2*(36
*g^2*j^2 - 9*g*h*j*(12*i + j*x) + h^2*(108*i^2 + 27*i*j*x + 4*j^2*x^2)))) +
 36*a*f^2*(h*i - g*j)^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*b*f*Log[c*(d*(e
+ f*x)^p)^q]*(h*j*(6*e*(3*h^2*i^2 - 3*g*h*i*j + g^2*j^2) + f*x*(6*g^2*j^2 -
 3*g*h*j*(6*i + j*x) + h^2*(18*i^2 + 9*i*j*x + 2*j^2*x^2))) + 6*f*(h*i - g*
j)^3*Log[(f*(g + h*x))/(f*g - e*h)])) + 36*b*f^3*(h*i - g*j)^3*p*q*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)])/(36*f^3*h^4)
```

Maple [F] time = 0.856, size = 0, normalized size = 0.

$$\int \frac{(jx+i)^3\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}{hx+g}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((j*x+i)^3*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$3\,ai^2j\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)-\frac{1}{6}\,aj^3\left(\frac{6\,g^3\log\left(hx+g\right)}{h^4}-\frac{2\,h^2x^3-3\,ghx^2+6\,g^2x}{h^3}\right)+\frac{3}{2}\,aij^2\left(\frac{2\,g^2\log\left(hx+g\right)}{h^3}+\frac{hx^2-2\,gx}{h^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] 3*a*i^2*j*(x/h - g*log(h*x + g)/h^2) - 1/6*a*j^3*(6*g^3*log(h*x + g)/h^4 -
(2*h^2*x^3 - 3*g*h*x^2 + 6*g^2*x)/h^3) + 3/2*a*i*j^2*(2*g^2*log(h*x + g)/h^
3 + (h*x^2 - 2*g*x)/h^2) + a*i^3*log(h*x + g)/h + integrate(((j^3*log(c) +
j^3*log(d^q))*b*x^3 + 3*(i*j^2*log(c) + i*j^2*log(d^q))*b*x^2 + 3*(i^2*j*lo
g(c) + i^2*j*log(d^q))*b*x + (i^3*log(c) + i^3*log(d^q))*b + (b*j^3*x^3 + 3
*b*i*j^2*x^2 + 3*b*i^2*j*x + b*i^3)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{aj^3x^3+3\,aij^2x^2+3\,ai^2jx+ai^3+\left(bj^3x^3+3\,bij^2x^2+3\,bi^2jx+bi^3\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a*j^3*x^3 + 3*a*i*j^2*x^2 + 3*a*i^2*j*x + a*i^3 + (b*j^3*x^3 + 3*
b*i*j^2*x^2 + 3*b*i^2*j*x + b*i^3)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**3*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(jx+i\right)^3\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^3*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)^3*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

3.524 $\int \frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx$

Optimal. Leaf size=258

$$\frac{bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{2h}$$

```
[Out] (a*j*(h*i - g*j)*x)/h^2 - (b*j*(f*i - e*j)*p*q*x)/(2*f*h) - (b*j*(h*i - g*j
)*p*q*x)/h^2 - (b*p*q*(i + j*x)^2)/(4*h) - (b*(f*i - e*j)^2*p*q*Log[e + f*x
])/(2*f^2*h) + (b*j*(h*i - g*j)*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2)
 + ((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h) + ((h*i - g*j)^2*(a
 + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (b*(h*
i - g*j)^2*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rubi [A] time = 0.544584, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2395, 43, 2445}

$$\frac{bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{(hi-gj)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{2h}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*(h*i - g*j)*x)/h^2 - (b*j*(f*i - e*j)*p*q*x)/(2*f*h) - (b*j*(h*i - g*j
)*p*q*x)/h^2 - (b*p*q*(i + j*x)^2)/(4*h) - (b*(f*i - e*j)^2*p*q*Log[e + f*x
])/(2*f^2*h) + (b*j*(h*i - g*j)*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2)
 + ((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(2*h) + ((h*i - g*j)^2*(a
 + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (b*(h*
i - g*j)^2*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(524+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{(524+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(\right.\right.$$

$$= \text{Subst}\left(\int\left(\frac{j(524h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h^2}+\frac{(524h-gj)^2\left(a+\right.}{h^2(}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(524+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx}{h}, cd^q(e+fx)^{pq}, c\left(d(\right.\right.$$

$$= \frac{aj(524h-gj)x}{h^2}+\frac{(524+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}+\frac{(524h-gj}{}$$

$$= \frac{aj(524h-gj)x}{h^2}+\frac{(524+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{2h}+\frac{(524h-gj}{}$$

$$= \frac{aj(524h-gj)x}{h^2}-\frac{bj(524f-ej)pqx}{2fh}-\frac{bj(524h-gj)pqx}{h^2}-\frac{bpq(524+jx)^2}{4h}$$

Mathematica [A] time = 0.296129, size = 231, normalized size = 0.9

$$\frac{4bf^2pq(hi-gj)^2\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)+f\left(hjx(2af(-2gj+4hi+hjx)+bpq(2ehj-f(-4gj+8hi+hjx)))+4af(hi-gj)^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (-2*b*e^2*h^2*j^2*p*q*Log[e + f*x] + f*(h*j*x*(2*a*f*(4*h*i - 2*g*j + h*j*x
) + b*p*q*(2*e*h*j - f*(8*h*i - 4*g*j + h*j*x))) + 4*a*f*(h*i - g*j)^2*Log[
(f*(g + h*x))/(f*g - e*h)] + 2*b*Log[c*(d*(e + f*x)^p)^q]*(h*j*(e*(4*h*i -
2*g*j) + f*x*(4*h*i - 2*g*j + h*j*x)) + 2*f*(h*i - g*j)^2*Log[(f*(g + h*x))
/(f*g - e*h)])) + 4*b*f^2*(h*i - g*j)^2*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g
) + e*h)])/(4*f^2*h^3)
```

Maple [F] time = 0.865, size = 0, normalized size = 0.

$$\int \frac{(jx+i)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,aij\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)+\frac{1}{2}\,aj^2\left(\frac{2\,g^2\log\left(hx+g\right)}{h^3}+\frac{hx^2-2\,gx}{h^2}\right)+\frac{ai^2\log\left(hx+g\right)}{h}+\int\frac{\left(j^2\log\left(c\right)+j^2\log\left(d^q\right)\right)bx^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] 2*a*i*j*(x/h - g*log(h*x + g)/h^2) + 1/2*a*j^2*(2*g^2*log(h*x + g)/h^3 + (h
*x^2 - 2*g*x)/h^2) + a*i^2*log(h*x + g)/h + integrate(((j^2*log(c) + j^2*lo
g(d^q))*b*x^2 + 2*(i*j*log(c) + i*j*log(d^q))*b*x + (i^2*log(c) + i^2*log(d
^q))*b + (b*j^2*x^2 + 2*b*i*j*x + b*i^2)*log(((f*x + e)^p)^q))/(h*x + g), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{aj^2x^2+2\,aijx+ai^2+\left(bj^2x^2+2\,bijx+bi^2\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a*j^2*x^2 + 2*a*i*j*x + a*i^2 + (b*j^2*x^2 + 2*b*i*j*x + b*i^2)*l
og(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(jx+i\right)^2\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

3.525 $\int \frac{(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx$

Optimal. Leaf size=129

$$\frac{bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{ajx}{h}+\frac{bj(e+fx)\log\left(c\left(d(e\right.\right.}{fh}$$

```
[Out] (a*j*x)/h - (b*j*p*q*x)/h + (b*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h)
+ ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*
h)])/h^2 + (b*(h*i - g*j)*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rubi [A] time = 0.332362, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {2418, 2389, 2295, 2394, 2393, 2391, 2445}

$$\frac{bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{ajx}{h}+\frac{bj(e+fx)\log\left(c\left(d(e\right.\right.}{fh}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*j*x)/h - (b*j*p*q*x)/h + (b*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h)
+ ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*
h)])/h^2 + (b*(h*i - g*j)*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(525+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{(525+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e\right.\right.$$

$$= \text{Subst}\left(\int \left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{h} + \frac{(525h-gj)\left(a+b\log\left(cd^q(e+\right.\right.}{h(g+hx)}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)dx}{h}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{ajx}{h} + \frac{(525h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Subst}\left(\frac{(b}{}\right.$$

$$= \frac{ajx}{h} + \frac{(525h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Subst}\left(\frac{(b}{}\right.$$

$$= \frac{ajx}{h} - \frac{bjpqx}{h} + \frac{bj(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{fh} + \frac{(525h-gj)\left(a+b\log\left(\right.\right.}{}$$

Mathematica [A] time = 0.119452, size = 120, normalized size = 0.93

$$\frac{bpq(hi-gj)\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)+(hi-gj)\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+ahjx+\frac{bhj(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{f}-b}{h^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(g + h*x),x]
```

```
[Out] (a*h*j*x - b*h*j*p*q*x + (b*h*j*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/f + (h*
i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)] +
b*(h*i - g*j)*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h^2
```

Maple [F] time = 0.645, size = 0, normalized size = 0.

$$\int \frac{(jx+i)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$aj\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)+\frac{ai\log\left(hx+g\right)}{h}+\int \frac{\left(j\log\left(c\right)+j\log\left(d^q\right)\right)bx+\left(i\log\left(c\right)+i\log\left(d^q\right)\right)b+\left(bjx+bi\right)\log\left(\left(\left(fx\right.\right.\right.}{hx+g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima
")
```

```
[Out] a*j*(x/h - g*log(h*x + g)/h^2) + a*i*log(h*x + g)/h + integrate(((j*log(c)
+ j*log(d^q))*b*x + (i*log(c) + i*log(d^q))*b + (b*j*x + b*i)*log(((f*x + e
)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{ajx+ai+\left(bjx+bi\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas
")
```

```
[Out] integral((a*j*x + a*i + (b*j*x + b*i)*log(((f*x + e)^p*d)^q*c))/(h*x + g),
x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)\right)\left(i+jx\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))*(i + j*x)/(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(jx+i)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

3.526 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx$

Optimal. Leaf size=68

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rubi [A] time = 0.112373, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2394, 2393, 2391, 2445}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{g+hx}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bfpq)\int \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)}{e+fx}dx}{h}, cd^q(e+f\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(bpq)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{hx}{fg-eh}\right)}{x}dx, x,\right.}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{bpq\text{Li}_2\left(-\frac{h(e+fx)}{fg-eh}\right)}{h}$$

Mathematica [A] time = 0.0068633, size = 67, normalized size = 0.99

$$\frac{bpq\text{PolyLog}\left(2, \frac{h(e+fx)}{eh-fg}\right)}{h} + \frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/h + (b*p*
q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$b\int \frac{\log\left(\left(\left(fx+e\right)^p\right)^q\right)+\log\left(c\right)+\log\left(d^q\right)}{hx+g}\,dx + \frac{a\log\left(hx+g\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="maxima")
```

```
[Out] b*integrate((log(((f*x + e)^p)^q) + log(c) + log(d^q))/(h*x + g), x) + a*lo
g(h*x + g)/h
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+b\log\left(c\left(d\left(e+fx\right)^{p}\right)^{q}\right)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))/(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/(h*x + g), x)
```

3.527 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=165

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\frac{bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\right.}{hi}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*
j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i
 - g*j) + (b*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (b
*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rubi [A] time = 0.467889, antiderivative size = 165, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {2418, 2394, 2393, 2391, 2445}

$$\frac{bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{hi-gj}-\frac{bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{hi-gj}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+b\right.}{hi}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*
j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i
 - g*j) + (b*p*q*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (b
*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(527+jx)}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(527+jx)}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{h\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(527h-gj)(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(527h-gj)(527+jx)}\right) dx, cd^q(e$$

$$= \text{Subst}\left(\frac{h\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}\,dx}{527h-gj}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{j\int \frac{a+b\log}{}}{52}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(52}{527}\right.}{527h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(52}{527}\right.}{527h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{527h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(52}{527}\right.}{527h-gj}$$

Mathematica [A] time = 0.0676646, size = 117, normalized size = 0.71

$$\frac{bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right) - bpq\text{PolyLog}\left(2,\frac{j(e+fx)}{ej-fi}\right) + \left(\log\left(\frac{f(g+hx)}{fg-eh}\right) - \log\left(\frac{f(i+jx)}{fi-ej}\right)\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])*(Log[(f*(g + h*x))/(f*g - e*h)] - Log[(f*
(i + j*x))/(f*i - e*j)]) + b*p*q*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] -
 b*p*q*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)])/(h*i - g*j)
```

Maple [F] time = 1.122, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{\log\left(hx+g\right)}{hi-gj}-\frac{\log\left(jx+i\right)}{hi-gj}\right)+b\int\frac{\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+\log\left(c\right)+\log\left(d^{q}\right)}{hjx^{2}+gi+\left(hi+gj\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="maxima
")
```

```
[Out] a*(log(h*x + g)/(h*i - g*j) - log(j*x + i)/(h*i - g*j)) + b*integrate((log(
((f*x + e)^p)^q) + log(c) + log(d^q))/(h*j*x^2 + g*i + (h*i + g*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hjx^{2}+gi+\left(hi+gj\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="fricas
")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*j*x^2 + g*i + (h*i + g*j)*x),
x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + i)), x)
```

3.528 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=268

$$\frac{bhpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^2}-\frac{bhpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^2}+\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(i+jx)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(\right.\right.\right.}{(hi-gj)^2}$$

```
[Out] -((b*f*p*q*Log[e + f*x])/((f*i - e*j)*(h*i - g*j))) + (a + b*Log[c*(d*(e +
f*x)^p)^q])/((h*i - g*j)*(i + j*x)) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^2 + (b*f*p*q*Log[i + j*x])/((f*i
 - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x)
)/(f*i - e*j)])/(h*i - g*j)^2 + (b*h*p*q*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (b*h*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/
(h*i - g*j)^2
```

Rubi [A] time = 0.595351, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {2418, 2394, 2393, 2391, 2395, 36, 31, 2445}

$$\frac{bhpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^2}-\frac{bhpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^2}+\frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(i+jx)(hi-gj)}+\frac{h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(\right.\right.\right.}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^2),x]
```


```
[Out] -((b*f*p*q*Log[e + f*x])/((f*i - e*j)*(h*i - g*j))) + (a + b*Log[c*(d*(e +
f*x)^p)^q])/((h*i - g*j)*(i + j*x)) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*L
og[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^2 + (b*f*p*q*Log[i + j*x])/((f*i
 - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x)
)/(f*i - e*j)])/(h*i - g*j)^2 + (b*h*p*q*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (b*h*p*q*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/
(h*i - g*j)^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(528+jx)^2}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(528+jx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(528h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(528h-gj)(528+jx)^2} - \frac{hj\left(a+b\log\right.}{(528h-\right.}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}dx}{(528h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{(hj)\int\frac{a+b\log}{}}{(528}\right.$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(528h-gj)^2} - \frac{h\left(a+b\log\right.}{}$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\log\left(\frac{f(g+hx)}{fg-eh}\right)}{(528h-gj)^2} - \frac{h\left(a+b\log\right.}{}$$

$$= -\frac{bfpq\log(e+fx)}{(528f-ej)(528h-gj)} + \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(528h-gj)(528+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{(528h-gj)^2}$$

Mathematica [A] time = 0.306487, size = 225, normalized size = 0.84

$$\frac{bhpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right) - bhpq\text{PolyLog}\left(2,\frac{j(e+fx)}{ej-fi}\right) + h\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - h\log\left(\frac{f(i+jx)}{fi-ej}\right)\left(a+\right.}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((a*(h*i - g*j))/(i + j*x) + (b*(h*i - g*j)*Log[c*(d*(e + f*x)^p)^q])/(i +
j*x) + h*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)] -
(b*f*(h*i - g*j)*p*q*(Log[e + f*x] - Log[i + j*x]))/(f*i - e*j) - h*(a + b*
Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)] + b*h*p*q*PolyLog[
2, (h*(e + f*x))/(-(f*g) + e*h)] - b*h*p*q*PolyLog[2, (j*(e + f*x))/(-(f*i)
 + e*j)])/(h*i - g*j)^2
```

Maple [F] time = 1.121, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{\left(hx+g\right)\left(jx+i\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{h\log\left(hx+g\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}-\frac{h\log\left(jx+i\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}+\frac{1}{hi^{2}-gij+\left(hij-gj^{2}\right)x}\right)+b\int\frac{\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)+\log\left(c\right)+\log\left(d^{q}\right.}{hj^{2}x^{3}+gi^{2}+\left(2\,hij+gj^{2}\right)x^{2}+\left(hi^{2}+2\,g\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="maxi
ma")
```

```
[Out] a*(h*log(h*x + g)/(h^2*i^2 - 2*g*h*i*j + g^2*j^2) - h*log(j*x + i)/(h^2*i^2
 - 2*g*h*i*j + g^2*j^2) + 1/(h*i^2 - g*i*j + (h*i*j - g*j^2)*x)) + b*integr
ate((log(((f*x + e)^p)^q) + log(c) + log(d^q))/(h*j^2*x^3 + g*i^2 + (2*h*i*
j + g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hj^{2}x^{3}+gi^{2}+\left(2\,hij+gj^{2}\right)x^{2}+\left(hi^{2}+2\,gij\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="fric
as")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*j^2*x^3 + g*i^2 + (2*h*i*j + g
*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^2,x, algorithm="giac
")

[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + i)^2), x)
```

3.529 $\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(i+jx)^3}\,dx$

Optimal. Leaf size=425

$$\frac{bh^2pq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^3}-\frac{bh^2pq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^3}+\frac{h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^3}-\frac{h^2\log\left(\cdots\right.}{}$$

```
[Out] -(b*f*p*q)/(2*(f*i - e*j)*(h*i - g*j)*(i + j*x)) - (b*f*h*p*q*Log[e + f*x])
/((f*i - e*j)*(h*i - g*j)^2) - (b*f^2*p*q*Log[e + f*x])/(2*(f*i - e*j)^2*(h
*i - g*j)) + (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*(h*i - g*j)*(i + j*x)^2) +
 (h*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((h*i - g*j)^2*(i + j*x)) + (h^2*(a +
 b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^3
+ (b*f*h*p*q*Log[i + j*x])/((f*i - e*j)*(h*i - g*j)^2) + (b*f^2*p*q*Log[i +
 j*x])/(2*(f*i - e*j)^2*(h*i - g*j)) - (h^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
)*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^3 + (b*h^2*p*q*PolyLog[2, -((
h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^3 - (b*h^2*p*q*PolyLog[2, -((j*(e +
 f*x))/(f*i - e*j))])/(h*i - g*j)^3
```

Rubi [A] time = 0.835042, antiderivative size = 425, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2394, 2393, 2391, 2395, 44, 36, 31, 2445}

$$\frac{bh^2pq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)}{(hi-gj)^3}-\frac{bh^2pq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)}{(hi-gj)^3}+\frac{h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^3}-\frac{h^2\log\left(\cdots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^3),x]
```


```
[Out] -(b*f*p*q)/(2*(f*i - e*j)*(h*i - g*j)*(i + j*x)) - (b*f*h*p*q*Log[e + f*x])
/((f*i - e*j)*(h*i - g*j)^2) - (b*f^2*p*q*Log[e + f*x])/(2*(f*i - e*j)^2*(h
*i - g*j)) + (a + b*Log[c*(d*(e + f*x)^p)^q])/(2*(h*i - g*j)*(i + j*x)^2) +
 (h*(a + b*Log[c*(d*(e + f*x)^p)^q]))/((h*i - g*j)^2*(i + j*x)) + (h^2*(a +
 b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i - g*j)^3
+ (b*f*h*p*q*Log[i + j*x])/((f*i - e*j)*(h*i - g*j)^2) + (b*f^2*p*q*Log[i +
 j*x])/(2*(f*i - e*j)^2*(h*i - g*j)) - (h^2*(a + b*Log[c*(d*(e + f*x)^p)^q]
)*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^3 + (b*h^2*p*q*PolyLog[2, -((
h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^3 - (b*h^2*p*q*PolyLog[2, -((j*(e +
 f*x))/(f*i - e*j))])/(h*i - g*j)^3
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2395

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + (g_.)*(x_
))^(q_.), x_Symbol] :> Simp[((f + g*x)^(q + 1)*(a + b*Log[c*(d + e*x)^n]))/
(g*(q + 1)), x] - Dist[(b*e*n)/(g*(q + 1)), Int[(f + g*x)^(q + 1)/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, q}, x] && NeQ[e*f - d*g, 0] && N
eQ[q, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{(g+hx)(529+jx)^3}\,dx = \text{Subst}\left(\int \frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{(g+hx)(529+jx)^3}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h^3\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(529h-gj)^3(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{(529h-gj)(529+jx)^3} - \frac{hj\left(a+\right.}{(529}\right.\right.$$

$$= \text{Subst}\left(\frac{h^3\int\frac{a+b\log\left(cd^q(e+fx)^{pq}\right)}{g+hx}dx}{(529h-gj)^3}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{\left(h^2j\right)\int}{}\right.$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2(529h-gj)(529+jx)^2} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(529h-gj)^2(529+jx)} + \frac{h^2\left(a+b\log\left(c\left(d(e\right.\right.\right.}{(52}$$

$$= \frac{a+b\log\left(c\left(d(e+fx)^p\right)^q\right)}{2(529h-gj)(529+jx)^2} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(529h-gj)^2(529+jx)} + \frac{h^2\left(a+b\log\left(c\left(d(e\right.\right.\right.}{(52}$$

$$= -\frac{bfpq}{2(529f-ej)(529h-gj)(529+jx)} - \frac{bfhpq\log(e+fx)}{(529f-ej)(529h-gj)^2} - \frac{bf^2pq\log(e+}{2(529f-ej)^2(529}$$

Mathematica [A] time = 0.536791, size = 363, normalized size = 0.85

$$\frac{2bh^2pq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right) - 2bh^2pq\text{PolyLog}\left(2,\frac{j(e+fx)}{ej-fi}\right) + 2h^2\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 2h^2\log\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])/((g + h*x)*(i + j*x)^3),x]
```

```
[Out] ((a*(h*i - g*j)^2)/(i + j*x)^2 + (2*a*h*(h*i - g*j))/(i + j*x) + (b*(h*i -
g*j)^2*Log[c*(d*(e + f*x)^p)^q])/(i + j*x)^2 + (2*b*h*(h*i - g*j)*Log[c*(d*
(e + f*x)^p)^q])/(i + j*x) + 2*h^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*
(g + h*x))/(f*g - e*h)] - (2*b*f*h*(h*i - g*j)*p*q*(Log[e + f*x] - Log[i +
j*x]))/(f*i - e*j) - (b*f*(h*i - g*j)^2*p*q*(f*i - e*j + f*(i + j*x)*Log[e
+ f*x] - f*(i + j*x)*Log[i + j*x]))/((f*i - e*j)^2*(i + j*x)) - 2*h^2*(a +
b*Log[c*(d*(e + f*x)^p)^q])*Log[(f*(i + j*x))/(f*i - e*j)] + 2*b*h^2*p*q*Po
lyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*b*h^2*p*q*PolyLog[2, (j*(e + f*x
))/(-(f*i) + e*j)])/(2*(h*i - g*j)^3)
```

Maple [F] time = 1.024, size = 0, normalized size = 0.

$$\int \frac{a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)}{\left(hx+g\right)\left(jx+i\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(\frac{2\,h^2\log\left(hx+g\right)}{h^3i^3-3\,gh^2i^2j+3\,g^2hij^2-g^3j^3}-\frac{2\,h^2\log\left(jx+i\right)}{h^3i^3-3\,gh^2i^2j+3\,g^2hij^2-g^3j^3}+\frac{2\,hjx+3\,hi-gj}{h^2i^4-2\,ghi^3j+g^2i^2j^2+\left(h^2i^2j^2-2\,ghij^3+g^2j^4\right)x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="maxi
ma")
```

```
[Out] 1/2*(2*h^2*log(h*x + g)/(h^3*i^3 - 3*g*h^2*i^2*j + 3*g^2*h*i*j^2 - g^3*j^3)
 - 2*h^2*log(j*x + i)/(h^3*i^3 - 3*g*h^2*i^2*j + 3*g^2*h*i*j^2 - g^3*j^3) +
 (2*h*j*x + 3*h*i - g*j)/(h^2*i^4 - 2*g*h*i^3*j + g^2*i^2*j^2 + (h^2*i^2*j^
2 - 2*g*h*i*j^3 + g^2*j^4)*x^2 + 2*(h^2*i^3*j - 2*g*h*i^2*j^2 + g^2*i*j^3)*
x))*a + b*integrate((log(((f*x + e)^p)^q) + log(c) + log(d^q))/(h*j^3*x^4 +
 g*i^3 + (3*h*i*j^2 + g*j^3)*x^3 + 3*(h*i^2*j + g*i*j^2)*x^2 + (h*i^3 + 3*g
*i^2*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{hj^3x^4+gi^3+\left(3\,hij^2+gj^3\right)x^3+3\,\left(hi^2j+gij^2\right)x^2+\left(hi^3+3\,gi^2j\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="fric
as")
```

```
[Out] integral((b*log(((f*x + e)^p*d)^q*c) + a)/(h*j^3*x^4 + g*i^3 + (3*h*i*j^2 +
 g*j^3)*x^3 + 3*(h*i^2*j + g*i*j^2)*x^2 + (h*i^3 + 3*g*i^2*j)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))/(h*x+g)/(j*x+i)**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a}{\left(hx+g\right)\left(jx+i\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))/(h*x+g)/(j*x+i)^3,x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)/((h*x + g)*(j*x + i)^3), x)
```

3.530 $\int \frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=519

$$\frac{2bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}-\frac{2b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{j(e+fx)(}{}$$

```
[Out] (-2*a*b*j*(f*i - e*j)*p*q*x)/(f*h) - (2*a*b*j*(h*i - g*j)*p*q*x)/h^2 + (2*b
^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (2*b^2*j*(h*i - g*j)*p^2*q^2*x)/h^2 + (
b^2*j^2*p^2*q^2*(e + f*x)^2)/(4*f^2*h) - (2*b^2*j*(f*i - e*j)*p*q*(e + f*x)
*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) - (2*b^2*j*(h*i - g*j)*p*q*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/(f*h^2) - (b*j^2*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(2*f^2*h) + (j*(f*i - e*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2)/(f^2*h) + (j*(h*i - g*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(f*h^2) + (j^2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*
f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x)
)/(f*g - e*h)])/h^3 + (2*b*(h*i - g*j)^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3 - (2*b^2*(h*i - g*j)^2*p^2
*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rubi [A] time = 1.34371, antiderivative size = 519, normalized size of antiderivative = 1., number of steps used = 20, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.371, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 2401, 2390, 2305, 2304, 2445}

$$\frac{2bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}-\frac{2b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^3}+\frac{j(e+fx)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```


```
[Out] (-2*a*b*j*(f*i - e*j)*p*q*x)/(f*h) - (2*a*b*j*(h*i - g*j)*p*q*x)/h^2 + (2*b
^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (2*b^2*j*(h*i - g*j)*p^2*q^2*x)/h^2 + (
b^2*j^2*p^2*q^2*(e + f*x)^2)/(4*f^2*h) - (2*b^2*j*(f*i - e*j)*p*q*(e + f*x)
*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) - (2*b^2*j*(h*i - g*j)*p*q*(e + f*x)*Log
[c*(d*(e + f*x)^p)^q])/(f*h^2) - (b*j^2*p*q*(e + f*x)^2*(a + b*Log[c*(d*(e
+ f*x)^p)^q]))/(2*f^2*h) + (j*(f*i - e*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*
x)^p)^q])^2)/(f^2*h) + (j*(h*i - g*j)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2)/(f*h^2) + (j^2*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(2*
f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x)
)/(f*g - e*h)])/h^3 + (2*b*(h*i - g*j)^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q
])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^3 - (2*b^2*(h*i - g*j)^2*p^2
*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(530+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{(530+jx)^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+fx)^{pq}\right.$$

$$= \text{Subst}\left(\int\left(\frac{j(530h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{h^2} + \frac{(530h-gj)^2}{}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(530+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2\,dx}{h}, cd^q(e+fx)^{pq},\right.$$

$$= \frac{(530h-gj)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^3} + \text{Subst}\left(\frac{j}{}\right.$$

$$= \frac{j(530h-gj)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh^2} + \frac{(530h-gj)^2\left(\right.}{}$$

$$= -\frac{2abj(530h-gj)pqx}{h^2} + \frac{j(530h-gj)(e+fx)\left(a+b\log\left(c\left(d(e+fx\right.\right.\right.}{fh^2}$$

$$= -\frac{2abj(530h-gj)pqx}{h^2} + \frac{2b^2j(530h-gj)p^2q^2x}{h^2} - \frac{2b^2j(530h-gj)pq(e}{}$$

$$= -\frac{2abj(530f-ej)pqx}{fh} - \frac{2abj(530h-gj)pqx}{h^2} + \frac{2b^2j(530h-gj)p^2q^2x}{h^2}$$

$$= -\frac{2abj(530f-ej)pqx}{fh} - \frac{2abj(530h-gj)pqx}{h^2} + \frac{2b^2j(530f-ej)p^2q^2x}{fh}$$

Mathematica [A] time = 0.692227, size = 927, normalized size = 1.79

$$\frac{-8bf^2h^2pq\left(-a+bpq\log(e+fx)-b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\left(\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)+\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\right)i^2+4b^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (4*f^2*h*j*(2*h*i - g*j)*x*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p
)^q])^2 + 2*f^2*h^2*j^2*x^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^
p)^q])^2 + 4*f^2*(h*i - g*j)^2*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*
x)^p)^q])^2*Log[g + h*x] - 8*b*f^2*h^2*i^2*p*q*(-a + b*p*q*Log[e + f*x] - b
```

```
*Log[c*(d*(e + f*x)^p)^q])*(Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] + P
olyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) - 16*b*f*h*i*j*p*q*(-a + b*p*q*Log
[e + f*x] - b*Log[c*(d*(e + f*x)^p)^q])*(-(h*(e + f*x)) + Log[e + f*x]*(e*h
 + f*h*x - f*g*Log[(f*(g + h*x))/(f*g - e*h)]) - f*g*PolyLog[2, (h*(e + f*x
))/(-(f*g) + e*h)]) + 2*b*j^2*p*q*(-a + b*p*q*Log[e + f*x] - b*Log[c*(d*(e
+ f*x)^p)^q])*(f*h*(f*x*(-4*g + h*x) - 2*e*(2*g + h*x)) + 2*Log[e + f*x]*(h
*(e + f*x)*(2*f*g + e*h - f*h*x) - 2*f^2*g^2*Log[(f*(g + h*x))/(f*g - e*h)]
) - 4*f^2*g^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + 8*b^2*f*h*i*j*p^2
*q^2*(h*(2*f*x - 2*(e + f*x)*Log[e + f*x] + (e + f*x)*Log[e + f*x]^2) - f*g
*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2,
 (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]
)) - b^2*j^2*p^2*q^2*(4*f*g*h*(2*f*x - 2*(e + f*x)*Log[e + f*x] + (e + f*x)
*Log[e + f*x]^2) + h^2*(f*x*(6*e - f*x) + (-6*e^2 - 4*e*f*x + 2*f^2*x^2)*Lo
g[e + f*x] + 2*(e^2 - f^2*x^2)*Log[e + f*x]^2) - 4*f^2*g^2*(Log[e + f*x]^2*
Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2, (h*(e + f*x))/(-
(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])) + 4*b^2*f^2*h^
2*i^2*p^2*q^2*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*
x]*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-
(f*g) + e*h)]))/(4*f^2*h^3)
```

Maple [F] time = 0.856, size = 0, normalized size = 0.

$$\int \frac{(jx+i)^2 \left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,a^2ij\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^2}\right)+\frac{1}{2}\,a^2j^2\left(\frac{2\,g^2\log\left(hx+g\right)}{h^3}+\frac{hx^2-2\,gx}{h^2}\right)+\frac{a^2i^2\log\left(hx+g\right)}{h}+\int\frac{2\left(i^2\log\left(c\right)+i^2\log\left(d^q\right)\right)ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="ma
xima")
```

```
[Out] 2*a^2*i*j*(x/h - g*log(h*x + g)/h^2) + 1/2*a^2*j^2*(2*g^2*log(h*x + g)/h^3
+ (h*x^2 - 2*g*x)/h^2) + a^2*i^2*log(h*x + g)/h + integrate((2*(i^2*log(c)
+ i^2*log(d^q))*a*b + (i^2*log(c)^2 + 2*i^2*log(c)*log(d^q) + i^2*log(d^q)^
2)*b^2 + (2*(j^2*log(c) + j^2*log(d^q))*a*b + (j^2*log(c)^2 + 2*j^2*log(c)*
log(d^q) + j^2*log(d^q)^2)*b^2)*x^2 + (b^2*j^2*x^2 + 2*b^2*i*j*x + b^2*i^2)
*log(((f*x + e)^p)^q)^2 + 2*(2*(i*j*log(c) + i*j*log(d^q))*a*b + (i*j*log(c
)^2 + 2*i*j*log(c)*log(d^q) + i*j*log(d^q)^2)*b^2)*x + 2*(a*b*i^2 + (i^2*lo
g(c) + i^2*log(d^q))*b^2 + (a*b*j^2 + (j^2*log(c) + j^2*log(d^q))*b^2)*x^2
+ 2*(a*b*i*j + (i*j*log(c) + i*j*log(d^q))*b^2)*x)*log(((f*x + e)^p)^q))/(h
*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^2j^2x^2 + 2\,a^2ijx + a^2i^2 + \left(b^2j^2x^2 + 2\,b^2ijx + b^2i^2\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 2\left(abj^2x^2 + 2\,abijx + abi^2\right)\log\left(\left(\right.\right.}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fr
icas")
```

```
[Out] integral((a^2*j^2*x^2 + 2*a^2*i*j*x + a^2*i^2 + (b^2*j^2*x^2 + 2*b^2*i*j*x
+ b^2*i^2)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*b*j^2*x^2 + 2*a*b*i*j*x + a*b*
i^2)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(jx+i\right)^2\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="gi
ac")
```

```
[Out] integrate((j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

3.531 $\int \frac{(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=240

$$\frac{2bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}-\frac{2b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log}{}$$

```
[Out] (-2*a*b*j*p*q*x)/h + (2*b^2*j*p^2*q^2*x)/h - (2*b^2*j*p*q*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
/(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/
(f*g - e*h)])/h^2 + (2*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (2*b^2*(h*i - g*j)*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rubi [A] time = 0.647182, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}-\frac{2b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h^2}+\frac{(hi-gj)\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*j*p*q*x)/h + (2*b^2*j*p^2*q^2*x)/h - (2*b^2*j*p*q*(e + f*x)*Log[c*(
d*(e + f*x)^p)^q])/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)
/(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/
(f*g - e*h)])/h^2 + (2*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (2*b^2*(h*i - g*j)*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^2
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(531+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}dx = \text{Subst}\left(\int \frac{(531+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}dx, cd^q(e+fx)^{pq}, c\left(d(\right.\right.$$

$$= \text{Subst}\left(\int \left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{h} + \frac{(531h-gj)\left(a+b\log\left(cd^q(e\right.\right.}{h(g+hx)}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 dx}{h}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^{\cdot}\right.$$

$$= \frac{(531h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Subst}\left(\frac{j\,\text{Subs}}{}\right.$$

$$= \frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{(531h-gj)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{h^2}$$

$$= -\frac{2abjpqx}{h} + \frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{(531h-gj)\left(a+b\right.}{}$$

$$= -\frac{2abjpqx}{h} + \frac{2b^2jp^2q^2x}{h} - \frac{2b^2jpq(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{fh} + \frac{j(e+f}{}$$

Mathematica [B] time = 0.347984, size = 852, normalized size = 3.55

$$\frac{fhjxa^2 + fhi\log(g+hx)a^2 - fgj\log(g+hx)a^2 - 2behjpqa - 2bfhjpqxa + 2behjpq\log(e+fx)a + 2bfhjx\log\left(c\left(d(e+f\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(g + h*x),x]
```

```
[Out] (-2*a*b*e*h*j*p*q + a^2*f*h*j*x - 2*a*b*f*h*j*p*q*x + 2*b^2*f*h*j*p^2*q^2*x
 + 2*a*b*e*h*j*p*q*Log[e + f*x] - b^2*e*h*j*p^2*q^2*Log[e + f*x]^2 - 2*b^2*
e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q] + 2*a*b*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]
 - 2*b^2*f*h*j*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 2*b^2*e*h*j*p*q*Log[e + f*x
]*Log[c*(d*(e + f*x)^p)^q] + b^2*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^2 + a^2*f
*h*i*Log[g + h*x] - a^2*f*g*j*Log[g + h*x] - 2*a*b*f*h*i*p*q*Log[e + f*x]*L
og[g + h*x] + 2*a*b*f*g*j*p*q*Log[e + f*x]*Log[g + h*x] + b^2*f*h*i*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[g + h*x
] + 2*a*b*f*h*i*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*a*b*f*g*j*Log[c*(
d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^2*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e +
 f*x)^p)^q]*Log[g + h*x] + 2*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^
p)^q]*Log[g + h*x] + b^2*f*h*i*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - b^
```

```
2*f*g*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*f*h*i*p*q*Log[e + f
*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 2*a*b*f*g*j*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - b^2*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/
(f*g - e*h)] + b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*
h)] + 2*b^2*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] - 2*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log
[(f*(g + h*x))/(f*g - e*h)] + 2*b*f*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*
x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] + 2*b^2*f*(-(h*i) + g*j)
*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/(f*h^2)
```

Maple [F] time = 0.637, size = 0, normalized size = 0.

$$\int \frac{(jx+i)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{2}j\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^{2}}\right)+\frac{a^{2}i\log\left(hx+g\right)}{h}+\int\frac{2\left(i\log\left(c\right)+i\log\left(d^{q}\right)\right)ab+\left(i\log\left(c\right)^{2}+2\,i\log\left(c\right)\log\left(d^{q}\right)+i\log\left(d^{q}\right)^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] a^2*j*(x/h - g*log(h*x + g)/h^2) + a^2*i*log(h*x + g)/h + integrate((2*(i*l
og(c) + i*log(d^q))*a*b + (i*log(c)^2 + 2*i*log(c)*log(d^q) + i*log(d^q)^2)
*b^2 + (b^2*j*x + b^2*i)*log(((f*x + e)^p)^q)^2 + (2*(j*log(c) + j*log(d^q)
)*a*b + (j*log(c)^2 + 2*j*log(c)*log(d^q) + j*log(d^q)^2)*b^2)*x + 2*((i*lo
g(c) + i*log(d^q))*b^2 + a*b*i + ((j*log(c) + j*log(d^q))*b^2 + a*b*j)*x)*l
og(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{a^{2}jx+a^{2}i+\left(b^{2}jx+b^{2}i\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\left(abjx+abi\right)\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fric
as")
```

[Out] integral((a^2*j*x + a^2*i + (b^2*j*x + b^2*i)*log(((f*x + e)^p*d)^q*c)^2 + 2*(a*b*j*x + a*b*i)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(jx+i)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

3.532 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx$

Optimal. Leaf size=123

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\right.\right.}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rubi [A] time = 0.275149, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}-\frac{2b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)}{h}+\frac{\log\left(\frac{f(g+hx)}{fg-eh}\right)\left(a+b\log\left(c\right.\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/h + (2*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/h - (2*b^2*p^2*q^2*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)}{e+fx}}{h}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(2bpq)\,\text{Subst}\left(\int \frac{(a+b\log(cd^qx^{p}}{}\right.}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\text{Li}}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{2bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)\text{Li}}{h}$$

Mathematica [B] time = 0.11753, size = 324, normalized size = 2.63

$$\frac{2bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)-2b^2p^2q^2\text{PolyLog}\left(3,\frac{h(e+fx)}{eh-fg}\right)+a^2\log(g+hx)+2ab\log(g+hx)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/(g + h*x),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
+ 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g)
```

```
+ e*h)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \frac{\left(a + b\ln\left(c\left(d\left(fx + e\right)^{p}\right)^{q}\right)\right)^{2}}{hx + g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^{2}\log\left(hx + g\right)}{h} + \int \frac{b^{2}\log\left(\left(\left(fx + e\right)^{p}\right)^{q}\right)^{2} + \left(\log\left(c\right)^{2} + 2\,\log\left(c\right)\log\left(d^{q}\right) + \log\left(d^{q}\right)^{2}\right)b^{2} + 2\,ab(\log\left(c\right) + \log\left(d^{q}\right)) + 2}{hx + g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^2*log(h*x + g)/h + integrate((b^2*log(((f*x + e)^p)^q)^2 + (log(c)^2 + 2*
log(c)*log(d^q) + log(d^q)^2)*b^2 + 2*a*b*(log(c) + log(d^q)) + 2*(b^2*(log
(c) + log(d^q)) + a*b)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{b^{2}\log\left(\left(\left(fx + e\right)^{p}d\right)^{q}c\right)^{2} + 2\,ab\log\left(\left(\left(fx + e\right)^{p}d\right)^{q}c\right) + a^{2}}{hx + g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*x + g), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a + b\log\left(c\left(d\left(e + fx\right)^{p}\right)^{q}\right)\right)^{2}}{g + hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g),x)
```

```
[Out] Integral((a + b*log(c*(d*(e + f*x)**p)**q))**2/(g + h*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/(h*x + g), x)
```

3.533 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=288

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{2bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e
+ f*x))/(f*g - e*h))])/(h*i - g*j) - (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q])*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (2*b^2*p^2*q^2*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) + (2*b^2*p^2*q^2*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rubi [A] time = 0.898805, antiderivative size = 288, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {2418, 2396, 2433, 2374, 6589, 2445}

$$\frac{2bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-\frac{2bpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)),x]
```


```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e
+ f*x))/(f*g - e*h))])/(h*i - g*j) - (2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^
q])*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (2*b^2*p^2*q^2*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) + (2*b^2*p^2*q^2*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(533+jx)}dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)(533+jx)}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(533h-gj)(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(533h-gj)(533+jx)}\right)dx, c$$

$$= \text{Subst}\left(\frac{h\int\frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}dx}{533h-gj}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{j\int}{}\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log}{533h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log}{533h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log}{533h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g+hx)}{fg-eh}\right)}{533h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log}{533h-gj}$$

Mathematica [B] time = 0.322164, size = 652, normalized size = 2.26

$$\frac{2bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 2bpq\text{PolyLog}\left(2,\frac{j(e+fx)}{ej-fi}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right) - 2b^2p}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)),x]
```

```
[Out] (a^2*Log[g + h*x] - 2*a*b*p*q*Log[e + f*x]*Log[g + h*x] + b^2*p^2*q^2*Log[e
 + f*x]^2*Log[g + h*x] + 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[g + h*x] + 2*a*b*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g
 - e*h)] - b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*b^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)]
- a^2*Log[i + j*x] + 2*a*b*p*q*Log[e + f*x]*Log[i + j*x] - b^2*p^2*q^2*Log[
e + f*x]^2*Log[i + j*x] - 2*a*b*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] + 2*b
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - b^2*Log[c*(d*(e
 + f*x)^p)^q]^2*Log[i + j*x] - 2*a*b*p*q*Log[e + f*x]*Log[(f*(i + j*x))/(f*
i - e*j)] + b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i - e*j)] - 2*b
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(i + j*x))/(f*i - e*j)]
```

```
 + 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (h*(e + f*x))/(-(f*g
) + e*h)] - 2*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, (j*(e + f*x
))/(-(f*i) + e*j)] - 2*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]
 + 2*b^2*p^2*q^2*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)])/(h*i - g*j)
```

Maple [F] time = 1.031, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{2}\left(\frac{\log\left(hx+g\right)}{hi-gj}-\frac{\log\left(jx+i\right)}{hi-gj}\right)+\int \frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2}+\left(\log\left(c\right)^{2}+2\,\log\left(c\right)\log\left(d^{q}\right)+\log\left(d^{q}\right)^{2}\right)b^{2}+2\,ab(\log\left(c\right)+}{hjx^{2}+gi+\left(hi+gj\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="maxi
ma")
```

```
[Out] a^2*(log(h*x + g)/(h*i - g*j) - log(j*x + i)/(h*i - g*j)) + integrate((b^2*
log(((f*x + e)^p)^q)^2 + (log(c)^2 + 2*log(c)*log(d^q) + log(d^q)^2)*b^2 +
2*a*b*(log(c) + log(d^q)) + 2*(b^2*(log(c) + log(d^q)) + a*b)*log(((f*x + e
)^p)^q))/(h*j*x^2 + g*i + (h*i + g*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\,ab\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a^{2}}{hjx^{2}+gi+\left(hi+gj\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="fric
as")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*j*x^2 + g*i + (h*i + g*j)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)/(j*x+i),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i),x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/((h*x + g)*(j*x + i)), x)
```

3.534 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=463

$$\frac{2bhpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}-\frac{2bhpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}+$$

```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(
f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (2*b*h*p*
q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))]
)/(h*i - g*j)^2 + (2*b^2*f*p^2*q^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))]
)/((f*i - e*j)*(h*i - g*j)) - (2*b*h*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2 - (2*b^2*h*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 + (2*b^2*h*p^2*q^2*P
olyLog[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2
```

Rubi [A] time = 1.18287, antiderivative size = 463, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2418, 2396, 2433, 2374, 6589, 2397, 2394, 2393, 2391, 2445}

$$\frac{2bhpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}-\frac{2bhpq\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(hi-gj)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)^2),x]
```



```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (2*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*Log[(
f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d*(
e + f*x)^p)^q])^2*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (2*b*h*p*
q*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[2, -((h*(e + f*x))/(f*g - e*h))]
)/(h*i - g*j)^2 + (2*b^2*f*p^2*q^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))]
)/((f*i - e*j)*(h*i - g*j)) - (2*b*h*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])*P
olyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2 - (2*b^2*h*p^2*q^2*P
olyLog[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 + (2*b^2*h*p^2*q^2*P
olyLog[3, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j)^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
```

```
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
```

```
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(g+hx)(534+jx)^2}dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(g+hx)(534+jx)^2}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int\left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(534h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{(534h-gj)(534+jx)^2} - \frac{hj\left(a\right.}{(5\ldots}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int\frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2}{g+hx}dx}{(534h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{(hj)\int\ldots}{\ldots}\right.$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g\ldots}{fg\ldots}\right.}{(534h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g\ldots}{fg\ldots}\right.}{(534h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g\ldots}{fg\ldots}\right.}{(534h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{(534f-ej)(534h-gj)(534+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2\log\left(\frac{f(g\ldots}{fg\ldots}\right.}{(534h-gj)^2}$$

Mathematica [A] time = 0.945503, size = 654, normalized size = 1.41

$$\frac{-2bpq\left(-h(i+jx)(fi-ej)\left(\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)+\log(e+fx)\log\left(\frac{f(g+hx)}{fg-eh}\right)\right)+h(i+jx)(fi-ej)\left(\text{PolyLog}\left(2,\frac{j(e+fx)}{ej-fi}\right)+\ldots\right.\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^2/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((f*i - e*j)*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])^2 + h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f
*x)^p)^q])^2*Log[g + h*x] - h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x]
 + b*Log[c*(d*(e + f*x)^p)^q])^2*Log[i + j*x] - 2*b*p*q*(a - b*p*q*Log[e +
f*x] + b*Log[c*(d*(e + f*x)^p)^q])*((h*i - g*j)*(j*(e + f*x)*Log[e + f*x] -
 f*(i + j*x)*Log[i + j*x]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(
g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i
```

```
- e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[2,
 (j*(e + f*x))/(-(f*i) + e*j)])) - b^2*p^2*q^2*((h*i - g*j)*(Log[e + f*x]*(
j*(e + f*x)*Log[e + f*x] - 2*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) -
2*f*(i + j*x)*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i
+ j*x)*(Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*Poly
Log[2, (h*(e + f*x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) +
 e*h)]) + h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i -
e*j)] + 2*Log[e + f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 2*PolyLog
[3, (j*(e + f*x))/(-(f*i) + e*j)])))/((f*i - e*j)*(h*i - g*j)^2*(i + j*x))
```

Maple [F] time = 1., size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{2}}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{2}\left(\frac{h\log\left(hx+g\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}-\frac{h\log\left(jx+i\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}+\frac{1}{hi^{2}-gij+\left(hij-gj^{2}\right)x}\right)+\int\frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{2}+\left(\log\left(c\right)^{2}+2\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="ma
xima")
```

```
[Out] a^2*(h*log(h*x + g)/(h^2*i^2 - 2*g*h*i*j + g^2*j^2) - h*log(j*x + i)/(h^2*i
^2 - 2*g*h*i*j + g^2*j^2) + 1/(h*i^2 - g*i*j + (h*i*j - g*j^2)*x)) + integr
ate((b^2*log(((f*x + e)^p)^q)^2 + (log(c)^2 + 2*log(c)*log(d^q) + log(d^q)^
2)*b^2 + 2*a*b*(log(c) + log(d^q)) + 2*(b^2*(log(c) + log(d^q)) + a*b)*log(
((f*x + e)^p)^q))/(h*j^2*x^3 + g*i^2 + (2*h*i*j + g*j^2)*x^2 + (h*i^2 + 2*g
*i*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$${\rm integral}\left(\frac{b^{2}\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)^{2}+2\,ab\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a^{2}}{hj^{2}x^{3}+gi^{2}+\left(2\,hij+gj^{2}\right)x^{2}+\left(hi^{2}+2\,gij\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="fr
icas")
```

```
[Out] integral((b^2*log(((f*x + e)^p*d)^q*c)^2 + 2*a*b*log(((f*x + e)^p*d)^q*c) +
 a^2)/(h*j^2*x^3 + g*i^2 + (2*h*i*j + g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**2/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^2/(h*x+g)/(j*x+i)^2,x, algorithm="gi
ac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^2/((h*x + g)*(j*x + i)^2), x)
```

3.535 $\int \frac{(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=742

$$-\frac{6b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{3bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\,\text{lo}\right.}{h^3}$$

```
[Out] (6*a*b^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (6*a*b^2*j*(h*i - g*j)*p^2*q^2*x)
/h^2 - (6*b^3*j*(f*i - e*j)*p^3*q^3*x)/(f*h) - (6*b^3*j*(h*i - g*j)*p^3*q^3
*x)/h^2 - (3*b^3*j^2*p^3*q^3*(e + f*x)^2)/(8*f^2*h) + (6*b^3*j*(f*i - e*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) + (6*b^3*j*(h*i - g*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2) + (3*b^2*j^2*p^2*q^2*(e
 + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(4*f^2*h) - (3*b*j*(f*i - e*j)*
p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f^2*h) - (3*b*j*(h*i - g
*j)*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f*h^2) - (3*b*j^2*p*
q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4*f^2*h) + (j*(f*i - e*j
)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f^2*h) + (j*(h*i - g*j)*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f*h^2) + (j^2*(e + f*x)^2*(a +
 b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (3*b*(h*i - g*j)^2
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e
*h))])/h^3 - (6*b^2*(h*i - g*j)^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3 + (6*b^3*(h*i - g*j)^2*p^3*q^
3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rubi [A] time = 1.83124, antiderivative size = 742, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 14, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 2401, 2390, 2305, 2304, 2445}

$$-\frac{6b^2p^2q^2(hi-gj)^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^3}+\frac{3bpq(hi-gj)^2\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\,\text{lo}\right.}{h^3}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (6*a*b^2*j*(f*i - e*j)*p^2*q^2*x)/(f*h) + (6*a*b^2*j*(h*i - g*j)*p^2*q^2*x)
/h^2 - (6*b^3*j*(f*i - e*j)*p^3*q^3*x)/(f*h) - (6*b^3*j*(h*i - g*j)*p^3*q^3
*x)/h^2 - (3*b^3*j^2*p^3*q^3*(e + f*x)^2)/(8*f^2*h) + (6*b^3*j*(f*i - e*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f^2*h) + (6*b^3*j*(h*i - g*j)*
p^2*q^2*(e + f*x)*Log[c*(d*(e + f*x)^p)^q])/(f*h^2) + (3*b^2*j^2*p^2*q^2*(e
 + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q]))/(4*f^2*h) - (3*b*j*(f*i - e*j)*
p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f^2*h) - (3*b*j*(h*i - g
*j)*p*q*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(f*h^2) - (3*b*j^2*p*
q*(e + f*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2)/(4*f^2*h) + (j*(f*i - e*j
)*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f^2*h) + (j*(h*i - g*j)*(e
 + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(f*h^2) + (j^2*(e + f*x)^2*(a +
 b*Log[c*(d*(e + f*x)^p)^q])^3)/(2*f^2*h) + ((h*i - g*j)^2*(a + b*Log[c*(d*
(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h^3 + (3*b*(h*i - g*j)^2
*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e
*h))])/h^3 - (6*b^2*(h*i - g*j)^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*
PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/h^3 + (6*b^3*(h*i - g*j)^2*p^3*q^
```

```
3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/h^3
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2401

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.
)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(f + g*x)^q*(a + b*Log[c*(d
 + e*x)^n])^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f -
 d*g, 0] && IGtQ[q, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2305

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbo
l] :> Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n])^p)/(d*(m + 1)), x] - Dist[(b*n
*p)/(m + 1), Int[(d*x)^m*(a + b*Log[c*x^n])^(p - 1), x], x] /; FreeQ[{a, b,
 c, d, m, n}, x] && NeQ[m, -1] && GtQ[p, 0]
```

Rule 2304

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :>
Simp[((d*x)^(m + 1)*(a + b*Log[c*x^n]))/(d*(m + 1)), x] - Simp[(b*n*(d*x)^(
m + 1))/(d*(m + 1)^2), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(535+jx)^2 \left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{(535+jx)^2 \left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= \text{Subst}\left(\int \left(\frac{j(535h-gj)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{h^2} + \frac{(535h-gj)^2\left(a\right.}{h}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int(535+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3\,dx}{h}, cd^q(e+fx)^{pq}, c\left(\right.\right.$$

$$= \frac{(535h-gj)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3 \log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^3} + \text{Subst}\left(\frac{j\int\left(\right.}{}\right.$$

$$= \frac{j(535h-gj)(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{fh^2} + \frac{(535h-gj)^2\left(a+\right.}{}$$

$$= -\frac{3bj(535h-gj)pq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh^2} + \frac{j(535h-gj}{}$$

$$= \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{3bj(535h-gj)pq(e+fx)\left(a+b\log\left(c\left(d(e+\right.\right.\right.}{fh^2}$$

$$= \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{6b^3j(535h-gj)p^3q^3x}{h^2} + \frac{6b^3j(535h-gj)p^2q^2(}{}$$

$$= \frac{6ab^2j(535f-ej)p^2q^2x}{fh} + \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{6b^3j(535h-gj)p^3q^3}{h^2}$$

$$= \frac{6ab^2j(535f-ej)p^2q^2x}{fh} + \frac{6ab^2j(535h-gj)p^2q^2x}{h^2} - \frac{6b^3j(535f-ej)p^3q^3}{fh}$$

Mathematica [B] time = 1.45203, size = 4056, normalized size = 5.47

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (-48*a^2*b*e*f*h^2*i*j*p*q + 24*a^2*b*e*f*g*h*j^2*p*q + 16*a^3*f^2*h^2*i*j*
x - 8*a^3*f^2*g*h*j^2*x - 48*a^2*b*f^2*h^2*i*j*p*q*x + 24*a^2*b*f^2*g*h*j^2
```

```
*p*q*x + 12*a^2*b*e*f*h^2*j^2*p*q*x + 96*a*b^2*f^2*h^2*i*j*p^2*q^2*x - 48*a
*b^2*f^2*g*h*j^2*p^2*q^2*x - 36*a*b^2*e*f*h^2*j^2*p^2*q^2*x - 96*b^3*f^2*h^
2*i*j*p^3*q^3*x + 48*b^3*f^2*g*h*j^2*p^3*q^3*x + 42*b^3*e*f*h^2*j^2*p^3*q^3
*x + 4*a^3*f^2*h^2*j^2*x^2 - 6*a^2*b*f^2*h^2*j^2*p*q*x^2 + 6*a*b^2*f^2*h^2*
j^2*p^2*q^2*x^2 - 3*b^3*f^2*h^2*j^2*p^3*q^3*x^2 + 48*a^2*b*e*f*h^2*i*j*p*q*
Log[e + f*x] - 24*a^2*b*e*f*g*h*j^2*p*q*Log[e + f*x] - 12*a^2*b*e^2*h^2*j^2
*p*q*Log[e + f*x] + 36*a*b^2*e^2*h^2*j^2*p^2*q^2*Log[e + f*x] + 96*b^3*e*f*
h^2*i*j*p^3*q^3*Log[e + f*x] - 48*b^3*e*f*g*h*j^2*p^3*q^3*Log[e + f*x] - 42
*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x] - 48*a*b^2*e*f*h^2*i*j*p^2*q^2*Log[e
+ f*x]^2 + 24*a*b^2*e*f*g*h*j^2*p^2*q^2*Log[e + f*x]^2 + 12*a*b^2*e^2*h^2*j
^2*p^2*q^2*Log[e + f*x]^2 - 18*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x]^2 + 16*
b^3*e*f*h^2*i*j*p^3*q^3*Log[e + f*x]^3 - 8*b^3*e*f*g*h*j^2*p^3*q^3*Log[e +
f*x]^3 - 4*b^3*e^2*h^2*j^2*p^3*q^3*Log[e + f*x]^3 - 96*a*b^2*e*f*h^2*i*j*p*
q*Log[c*(d*(e + f*x)^p)^q] + 48*a*b^2*e*f*g*h*j^2*p*q*Log[c*(d*(e + f*x)^p)
^q] + 48*a^2*b*f^2*h^2*i*j*x*Log[c*(d*(e + f*x)^p)^q] - 24*a^2*b*f^2*g*h*j^
2*x*Log[c*(d*(e + f*x)^p)^q] - 96*a*b^2*f^2*h^2*i*j*p*q*x*Log[c*(d*(e + f*x
)^p)^q] + 48*a*b^2*f^2*g*h*j^2*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 24*a*b^2*e*
f*h^2*j^2*p*q*x*Log[c*(d*(e + f*x)^p)^q] + 96*b^3*f^2*h^2*i*j*p^2*q^2*x*Log
[c*(d*(e + f*x)^p)^q] - 48*b^3*f^2*g*h*j^2*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^
q] - 36*b^3*e*f*h^2*j^2*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^q] + 12*a^2*b*f^2*h
^2*j^2*x^2*Log[c*(d*(e + f*x)^p)^q] - 12*a*b^2*f^2*h^2*j^2*p*q*x^2*Log[c*(d
*(e + f*x)^p)^q] + 6*b^3*f^2*h^2*j^2*p^2*q^2*x^2*Log[c*(d*(e + f*x)^p)^q] +
 96*a*b^2*e*f*h^2*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 48*a*b^2*
e*f*g*h*j^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 24*a*b^2*e^2*h^2*j^
2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] + 36*b^3*e^2*h^2*j^2*p^2*q^2*Lo
g[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 48*b^3*e*f*h^2*i*j*p^2*q^2*Log[e + f*
x]^2*Log[c*(d*(e + f*x)^p)^q] + 24*b^3*e*f*g*h*j^2*p^2*q^2*Log[e + f*x]^2*L
og[c*(d*(e + f*x)^p)^q] + 12*b^3*e^2*h^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[c*(
d*(e + f*x)^p)^q] - 48*b^3*e*f*h^2*i*j*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 24*
b^3*e*f*g*h*j^2*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 48*a*b^2*f^2*h^2*i*j*x*Log
[c*(d*(e + f*x)^p)^q]^2 - 24*a*b^2*f^2*g*h*j^2*x*Log[c*(d*(e + f*x)^p)^q]^2
 - 48*b^3*f^2*h^2*i*j*p*q*x*Log[c*(d*(e + f*x)^p)^q]^2 + 24*b^3*f^2*g*h*j^2
*p*q*x*Log[c*(d*(e + f*x)^p)^q]^2 + 12*b^3*e*f*h^2*j^2*p*q*x*Log[c*(d*(e +
f*x)^p)^q]^2 + 12*a*b^2*f^2*h^2*j^2*x^2*Log[c*(d*(e + f*x)^p)^q]^2 - 6*b^3*
f^2*h^2*j^2*p*q*x^2*Log[c*(d*(e + f*x)^p)^q]^2 + 48*b^3*e*f*h^2*i*j*p*q*Log
[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 - 24*b^3*e*f*g*h*j^2*p*q*Log[e + f*x]*
Log[c*(d*(e + f*x)^p)^q]^2 - 12*b^3*e^2*h^2*j^2*p*q*Log[e + f*x]*Log[c*(d*(
e + f*x)^p)^q]^2 + 16*b^3*f^2*h^2*i*j*x*Log[c*(d*(e + f*x)^p)^q]^3 - 8*b^3*
f^2*g*h*j^2*x*Log[c*(d*(e + f*x)^p)^q]^3 + 4*b^3*f^2*h^2*j^2*x^2*Log[c*(d*(
e + f*x)^p)^q]^3 + 8*a^3*f^2*h^2*i^2*Log[g + h*x] - 16*a^3*f^2*g*h*i*j*Log[
g + h*x] + 8*a^3*f^2*g^2*j^2*Log[g + h*x] - 24*a^2*b*f^2*h^2*i^2*p*q*Log[e
+ f*x]*Log[g + h*x] + 48*a^2*b*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[g + h*x] -
24*a^2*b*f^2*g^2*j^2*p*q*Log[e + f*x]*Log[g + h*x] + 24*a*b^2*f^2*h^2*i^2*p
^2*q^2*Log[e + f*x]^2*Log[g + h*x] - 48*a*b^2*f^2*g*h*i*j*p^2*q^2*Log[e + f
*x]^2*Log[g + h*x] + 24*a*b^2*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[g + h*
x] - 8*b^3*f^2*h^2*i^2*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 16*b^3*f^2*g*h
*i*j*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] - 8*b^3*f^2*g^2*j^2*p^3*q^3*Log[e
+ f*x]^3*Log[g + h*x] + 24*a^2*b*f^2*h^2*i^2*Log[c*(d*(e + f*x)^p)^q]*Log[g
 + h*x] - 48*a^2*b*f^2*g*h*i*j*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 24*a
^2*b*f^2*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48*a*b^2*f^2*h^2*i
^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 96*a*b^2*f^2*g*
h*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48*a*b^2*f^2
*g^2*j^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 24*b^3*f^
2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 48
*b^3*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*
x] + 24*b^3*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log
[g + h*x] + 24*a*b^2*f^2*h^2*i^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] -
48*a*b^2*f^2*g*h*i*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 24*a*b^2*f^2
*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 24*b^3*f^2*h^2*i^2*p*q*L
```

```
og[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 48*b^3*f^2*g*h*i*j*p*
q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 24*b^3*f^2*g^2*j^2
*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 8*b^3*f^2*h^2*i
^2*Log[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] - 16*b^3*f^2*g*h*i*j*Log[c*(d*(e
 + f*x)^p)^q]^3*Log[g + h*x] + 8*b^3*f^2*g^2*j^2*Log[c*(d*(e + f*x)^p)^q]^3
*Log[g + h*x] + 24*a^2*b*f^2*h^2*i^2*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*
g - e*h)] - 48*a^2*b*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g -
e*h)] + 24*a^2*b*f^2*g^2*j^2*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)
] - 24*a*b^2*f^2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*
h)] + 48*a*b^2*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g -
e*h)] - 24*a*b^2*f^2*g^2*j^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g
- e*h)] + 8*b^3*f^2*h^2*i^2*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g -
 e*h)] - 16*b^3*f^2*g*h*i*j*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g -
 e*h)] + 8*b^3*f^2*g^2*j^2*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g -
e*h)] + 48*a*b^2*f^2*h^2*i^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] - 96*a*b^2*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 48*a*b^2*f^2*g^2*j^2*p*q*
Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 24*b
^3*f^2*h^2*i^2*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g +
h*x))/(f*g - e*h)] + 48*b^3*f^2*g*h*i*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e
+ f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 24*b^3*f^2*g^2*j^2*p^2*q^2*Lo
g[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] + 24*b
^3*f^2*h^2*i^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x)
)/(f*g - e*h)] - 48*b^3*f^2*g*h*i*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^
q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 24*b^3*f^2*g^2*j^2*p*q*Log[e + f*x]*L
og[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 24*b*f^2*(h*i -
g*j)^2*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f
*g) + e*h)] - 48*b^2*f^2*(h*i - g*j)^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)
^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 48*b^3*f^2*h^2*i^2*p^3*q^3*
PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h)] - 96*b^3*f^2*g*h*i*j*p^3*q^3*PolyL
og[4, (h*(e + f*x))/(-(f*g) + e*h)] + 48*b^3*f^2*g^2*j^2*p^3*q^3*PolyLog[4,
 (h*(e + f*x))/(-(f*g) + e*h)])/(8*f^2*h^3)
```

Maple [F] time = 0.841, size = 0, normalized size = 0.

$$\int \frac{\left(jx+i\right)^{2} \left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)

[Out] int((j*x+i)^2*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="ma
xima")
```

```
[Out] 2*a^3*i*j*(x/h - g*log(h*x + g)/h^2) + 1/2*a^3*j^2*(2*g^2*log(h*x + g)/h^3
+ (h*x^2 - 2*g*x)/h^2) + a^3*i^2*log(h*x + g)/h + integrate((3*(i^2*log(c)
+ i^2*log(d^q))*a^2*b + 3*(i^2*log(c)^2 + 2*i^2*log(c)*log(d^q) + i^2*log(d
^q)^2)*a*b^2 + (i^2*log(c)^3 + 3*i^2*log(c)^2*log(d^q) + 3*i^2*log(c)*log(d
^q)^2 + i^2*log(d^q)^3)*b^3 + (b^3*j^2*x^2 + 2*b^3*i*j*x + b^3*i^2)*log(((f
*x + e)^p)^q)^3 + (3*(j^2*log(c) + j^2*log(d^q))*a^2*b + 3*(j^2*log(c)^2 +
2*j^2*log(c)*log(d^q) + j^2*log(d^q)^2)*a*b^2 + (j^2*log(c)^3 + 3*j^2*log(c
)^2*log(d^q) + 3*j^2*log(c)*log(d^q)^2 + j^2*log(d^q)^3)*b^3)*x^2 + 3*(a*b^
2*i^2 + (i^2*log(c) + i^2*log(d^q))*b^3 + (a*b^2*j^2 + (j^2*log(c) + j^2*lo
g(d^q))*b^3)*x^2 + 2*(a*b^2*i*j + (i*j*log(c) + i*j*log(d^q))*b^3)*x)*log((
(f*x + e)^p)^q)^2 + 2*(3*(i*j*log(c) + i*j*log(d^q))*a^2*b + 3*(i*j*log(c)^
2 + 2*i*j*log(c)*log(d^q) + i*j*log(d^q)^2)*a*b^2 + (i*j*log(c)^3 + 3*i*j*l
og(c)^2*log(d^q) + 3*i*j*log(c)*log(d^q)^2 + i*j*log(d^q)^3)*b^3)*x + 3*(a^
2*b*i^2 + 2*(i^2*log(c) + i^2*log(d^q))*a*b^2 + (i^2*log(c)^2 + 2*i^2*log(c
)*log(d^q) + i^2*log(d^q)^2)*b^3 + (a^2*b*j^2 + 2*(j^2*log(c) + j^2*log(d^q
))*a*b^2 + (j^2*log(c)^2 + 2*j^2*log(c)*log(d^q) + j^2*log(d^q)^2)*b^3)*x^2
 + 2*(a^2*b*i*j + 2*(i*j*log(c) + i*j*log(d^q))*a*b^2 + (i*j*log(c)^2 + 2*i
*j*log(c)*log(d^q) + i*j*log(d^q)^2)*b^3)*x)*log(((f*x + e)^p)^q))/(h*x + g
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^3j^2x^2 + 2\,a^3ijx + a^3i^2 + \left(b^3j^2x^2 + 2\,b^3ijx + b^3i^2\right)\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)^3 + 3\left(ab^2j^2x^2 + 2\,ab^2ijx + ab^2i^2\right)\log}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fr
icas")
```

```
[Out] integral((a^3*j^2*x^2 + 2*a^3*i*j*x + a^3*i^2 + (b^3*j^2*x^2 + 2*b^3*i*j*x
+ b^3*i^2)*log(((f*x + e)^p*d)^q*c)^3 + 3*(a*b^2*j^2*x^2 + 2*a*b^2*i*j*x +
a*b^2*i^2)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*j^2*x^2 + 2*a^2*b*i*j*x +
a^2*b*i^2)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)**2*(a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(jx+i\right)^2\left(b\log\left(\left(\left(fx+e\right)^pd\right)^qc\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)^2*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="gi
ac")
```

```
[Out] integrate((j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

3.536 $\int \frac{(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=349

$$-\frac{6b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{3bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\right.}{h^2}$$

```
[Out] (6*a*b^2*j*p^2*q^2*x)/h - (6*b^3*j*p^3*q^3*x)/h + (6*b^3*j*p^2*q^2*(e + f*x
)*Log[c*(d*(e + f*x)^p)^q])/(f*h) - (3*b*j*p*q*(e + f*x)*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2)/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/
(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(
f*g - e*h)])/h^2 + (3*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*
PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (6*b^2*(h*i - g*j)*p^2*q^2*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
h^2 + (6*b^3*(h*i - g*j)*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/
h^2
```

Rubi [A] time = 0.893341, antiderivative size = 349, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {2418, 2389, 2296, 2295, 2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2(hi-gj)\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h^2}+\frac{3bpq(hi-gj)\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\right.}{h^2}$$

Antiderivative was successfully verified.

```
[In] Int[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```



```
[Out] (6*a*b^2*j*p^2*q^2*x)/h - (6*b^3*j*p^3*q^3*x)/h + (6*b^3*j*p^2*q^2*(e + f*x
)*Log[c*(d*(e + f*x)^p)^q])/(f*h) - (3*b*j*p*q*(e + f*x)*(a + b*Log[c*(d*(e
 + f*x)^p)^q])^2)/(f*h) + (j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/
(f*h) + ((h*i - g*j)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(
f*g - e*h)])/h^2 + (3*b*(h*i - g*j)*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*
PolyLog[2, -((h*(e + f*x))/(f*g - e*h))])/h^2 - (6*b^2*(h*i - g*j)*p^2*q^2*
(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h))])/
h^2 + (6*b^3*(h*i - g*j)*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g - e*h))])/
h^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2296

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b
*Log[c*x^n])^p, x] - Dist[b*n*p, Int[(a + b*Log[c*x^n])^(p - 1), x], x] /;
FreeQ[{a, b, c, n}, x] && GtQ[p, 0] && IntegerQ[2*p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{(536+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}dx = \text{Subst}\left(\int \frac{(536+jx)\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}dx, cd^q(e+fx)^{pq}, c\right.$$

$$= \text{Subst}\left(\int\left(\frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{h} + \frac{(536h-gj)\left(a+b\log\left(c\right.\right.}{h(g+hx)}\right.\right.$$

$$= \text{Subst}\left(\frac{j\int\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3 dx}{h}, cd^q(e+fx)^{pq}, c\left(d(e+fx\right.\right.$$

$$= \frac{(536h-gj)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h^2} + \text{Subst}\left(\frac{j\,\text{Su}}{}\right.$$

$$= \frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{fh} + \frac{(536h-gj)\left(a+b\log\left(c\left(d\right.\right.\right.}{h}$$

$$= -\frac{3bjpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{j(e+fx)\left(a+b\log\left(\right.\right.}{fh}$$

$$= \frac{6ab^2jp^2q^2x}{h} - \frac{3bjpq(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}{fh} + \frac{j(e+fx}{}$$

$$= \frac{6ab^2jp^2q^2x}{h} - \frac{6b^3jp^3q^3x}{h} + \frac{6b^3jp^2q^2(e+fx)\log\left(c\left(d(e+fx)^p\right)^q\right)}{fh} - $$

<u>**Mathematica**</u> **[B]** time = 0.677263, size = 1769, normalized size = 5.07

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/(g + h*x),x]
```

```
[Out] (-3*a^2*b*e*h*j*p*q + a^3*f*h*j*x - 3*a^2*b*f*h*j*p*q*x + 6*a*b^2*f*h*j*p^2
*q^2*x - 6*b^3*f*h*j*p^3*q^3*x + 3*a^2*b*e*h*j*p*q*Log[e + f*x] + 6*b^3*e*h
*j*p^3*q^3*Log[e + f*x] - 3*a*b^2*e*h*j*p^2*q^2*Log[e + f*x]^2 + b^3*e*h*j*
p^3*q^3*Log[e + f*x]^3 - 6*a*b^2*e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q] + 3*a^2
*b*f*h*j*x*Log[c*(d*(e + f*x)^p)^q] - 6*a*b^2*f*h*j*p*q*x*Log[c*(d*(e + f*x
)^p)^q] + 6*b^3*f*h*j*p^2*q^2*x*Log[c*(d*(e + f*x)^p)^q] + 6*a*b^2*e*h*j*p*
q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q] - 3*b^3*e*h*j*p^2*q^2*Log[e + f*x]^
2*Log[c*(d*(e + f*x)^p)^q] - 3*b^3*e*h*j*p*q*Log[c*(d*(e + f*x)^p)^q]^2 + 3
```

```
*a*b^2*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^2 - 3*b^3*f*h*j*p*q*x*Log[c*(d*(e +
 f*x)^p)^q]^2 + 3*b^3*e*h*j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2 + b
^3*f*h*j*x*Log[c*(d*(e + f*x)^p)^q]^3 + a^3*f*h*i*Log[g + h*x] - a^3*f*g*j*
Log[g + h*x] - 3*a^2*b*f*h*i*p*q*Log[e + f*x]*Log[g + h*x] + 3*a^2*b*f*g*j*
p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[g
+ h*x] - 3*a*b^2*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[g + h*x] - b^3*f*h*i*p^3*
q^3*Log[e + f*x]^3*Log[g + h*x] + b^3*f*g*j*p^3*q^3*Log[e + f*x]^3*Log[g +
h*x] + 3*a^2*b*f*h*i*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 3*a^2*b*f*g*j*
Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*f*h*i*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 6*a*b^2*f*g*j*p*q*Log[e + f*x]*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] - 3*b^3*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d
*(e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*f*h*i*Log[c*(d*(e + f*x)^p)^q]^2*Lo
g[g + h*x] - 3*a*b^2*f*g*j*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] - 3*b^3*
f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + 3*b^3*f*g*
j*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*f*h*i*Log[
c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] - b^3*f*g*j*Log[c*(d*(e + f*x)^p)^q]^3*
Log[g + h*x] + 3*a^2*b*f*h*i*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)
] - 3*a^2*b*f*g*j*p*q*Log[e + f*x]*Log[(f*(g + h*x))/(f*g - e*h)] - 3*a*b^2
*f*h*i*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 3*a*b^2*f*g*
j*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + b^3*f*h*i*p^3*q^3
*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] - b^3*f*g*j*p^3*q^3*Log[e +
f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*a*b^2*f*h*i*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 6*a*b^2*f*g*j*p*q*Log
[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*h)] - 3*b^3*f
*h*i*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g
 - e*h)] + 3*b^3*f*g*j*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[
(f*(g + h*x))/(f*g - e*h)] + 3*b^3*f*h*i*p*q*Log[e + f*x]*Log[c*(d*(e + f*x
)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] - 3*b^3*f*g*j*p*q*Log[e + f*x]*Log
[c*(d*(e + f*x)^p)^q]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 3*b*f*(h*i - g*j)*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e
*h)] - 6*b^2*f*(h*i - g*j)*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog
[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*f*h*i*p^3*q^3*PolyLog[4, (h*(e +
f*x))/(-(f*g) + e*h)] - 6*b^3*f*g*j*p^3*q^3*PolyLog[4, (h*(e + f*x))/(-(f*g
) + e*h)])/(f*h^2)
```

Maple [F] time = 0.628, size = 0, normalized size = 0.

$$\int \frac{(jx+i)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

```
[Out] int((j*x+i)*(a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{3}j\left(\frac{x}{h}-\frac{g\log\left(hx+g\right)}{h^{2}}\right)+\frac{a^{3}i\log\left(hx+g\right)}{h}+\int \frac{3\left(i\log\left(c\right)+i\log\left(d^{q}\right)\right)a^{2}b+3\left(i\log\left(c\right)^{2}+2\,i\log\left(c\right)\log\left(d^{q}\right)+i\log\left(d^{q}\right)^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxi
ma")
```

```
[Out] a^3*j*(x/h - g*log(h*x + g)/h^2) + a^3*i*log(h*x + g)/h + integrate((3*(i*l
og(c) + i*log(d^q))*a^2*b + 3*(i*log(c)^2 + 2*i*log(c)*log(d^q) + i*log(d^q
)^2)*a*b^2 + (i*log(c)^3 + 3*i*log(c)^2*log(d^q) + 3*i*log(c)*log(d^q)^2 +
i*log(d^q)^3)*b^3 + (b^3*j*x + b^3*i)*log(((f*x + e)^p)^q)^3 + 3*((i*log(c)
 + i*log(d^q))*b^3 + a*b^2*i + ((j*log(c) + j*log(d^q))*b^3 + a*b^2*j)*x)*l
og(((f*x + e)^p)^q)^2 + (3*(j*log(c) + j*log(d^q))*a^2*b + 3*(j*log(c)^2 +
2*j*log(c)*log(d^q) + j*log(d^q)^2)*a*b^2 + (j*log(c)^3 + 3*j*log(c)^2*log(
d^q) + 3*j*log(c)*log(d^q)^2 + j*log(d^q)^3)*b^3)*x + 3*(2*(i*log(c) + i*lo
g(d^q))*a*b^2 + (i*log(c)^2 + 2*i*log(c)*log(d^q) + i*log(d^q)^2)*b^3 + a^2
*b*i + (2*(j*log(c) + j*log(d^q))*a*b^2 + (j*log(c)^2 + 2*j*log(c)*log(d^q)
 + j*log(d^q)^2)*b^3 + a^2*b*j)*x)*log(((f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{a^3jx + a^3i + \left(b^3jx + b^3i\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3 + 3\left(ab^2jx + ab^2i\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + 3\left(a^2bjx + a^2bi\right)}{hx+g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fric
as")
```

```
[Out] integral((a^3*j*x + a^3*i + (b^3*j*x + b^3*i)*log(((f*x + e)^p*d)^q*c)^3 +
3*(a*b^2*j*x + a*b^2*i)*log(((f*x + e)^p*d)^q*c)^2 + 3*(a^2*b*j*x + a^2*b*i
)*log(((f*x + e)^p*d)^q*c))/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(jx+i\right)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)*(a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

3.537 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx$

Optimal. Leaf size=177

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{h}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```

Rubi [A] time = 0.426736, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{h}+\frac{3bpq\text{PolyLog}\left(2,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right.}{h}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```


```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/h + (3*
b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g -
e*h))])/h - (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h
*(e + f*x))/(f*g - e*h))])/h + (6*b^3*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f
*g - e*h))])/h
```


Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] && !IntegerQ[n] && !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{g+hx}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bfpq)\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^2 \dots}{e+fx}}{h} \dots\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} - \text{Subst}\left(\frac{(3bpq)\,\text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q x^{p\dots}\right)\right)\dots}{\dots}\right)}{\dots}\right)$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \text{L}\dots}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \text{L}\dots}{h}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{h} + \frac{3bpq\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2 \text{L}\dots}{h}$$

Mathematica [B] time = 0.246605, size = 646, normalized size = 3.65

$$-6b^2p^2q^2\text{PolyLog}\left(3,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)+3bpq\text{PolyLog}\left(2,\frac{h(e+fx)}{eh-fg}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/(g + h*x),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] + 3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLo
g[2, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x
)^p)^q])*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*b^3*p^3*q^3*PolyLog[4
, (h*(e + f*x))/(-(f*g) + e*h)])/h
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3\log\left(hx+g\right)}{h}+\int\frac{b^3\log\left(\left(\left(fx+e\right)^p\right)^q\right)^3+3\left(\log\left(c\right)^2+2\,\log\left(c\right)\log\left(d^q\right)+\log\left(d^q\right)^2\right)ab^2+\left(\log\left(c\right)^3+3\,\log\left(c\right)^2\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="maxima")
```

```
[Out] a^3*log(h*x + g)/h + integrate((b^3*log(((f*x + e)^p)^q)^3 + 3*(log(c)^2 +
2*log(c)*log(d^q) + log(d^q)^2)*a*b^2 + (log(c)^3 + 3*log(c)^2*log(d^q) + 3
*log(c)*log(d^q)^2 + log(d^q)^3)*b^3 + 3*a^2*b*(log(c) + log(d^q)) + 3*(b^3
*(log(c) + log(d^q)) + a*b^2)*log(((f*x + e)^p)^q)^2 + 3*((log(c)^2 + 2*log
(c)*log(d^q) + log(d^q)^2)*b^3 + 2*a*b^2*(log(c) + log(d^q)) + a^2*b)*log((
```

```
(f*x + e)^p)^q))/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="fricas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g),x, algorithm="giac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/(h*x + g), x)
```

3.538 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(i+jx)}\,dx$

Optimal. Leaf size=410

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{hi-gj}$$

```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(
e + f*x))/(f*g - e*h))])/(h*i - g*j) - (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (6*b^2*p^2*
q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h)
)])/(h*i - g*j) + (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3
, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) + (6*b^3*p^3*q^3*PolyLog[4, -(
(h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (6*b^3*p^3*q^3*PolyLog[4, -((j*(
e + f*x))/(f*i - e*j))])/(h*i - g*j)
```

Rubi [A] time = 1.25765, antiderivative size = 410, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {2418, 2396, 2433, 2374, 2383, 6589, 2445}

$$-\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{hi-gj}+\frac{6b^2p^2q^2\text{PolyLog}\left(3,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right.\right.\right.}{hi-gj}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)),x]
```


```
[Out] ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g - e*h)])/(h*i -
g*j) - ((a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/
(h*i - g*j) + (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(
e + f*x))/(f*g - e*h))])/(h*i - g*j) - (3*b*p*q*(a + b*Log[c*(d*(e + f*x)^p
)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) - (6*b^2*p^2*
q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((h*(e + f*x))/(f*g - e*h)
)])/(h*i - g*j) + (6*b^2*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3
, -((j*(e + f*x))/(f*i - e*j))])/(h*i - g*j) + (6*b^3*p^3*q^3*PolyLog[4, -(
(h*(e + f*x))/(f*g - e*h))])/(h*i - g*j) - (6*b^3*p^3*q^3*PolyLog[4, -((j*(
e + f*x))/(f*i - e*j))])/(h*i - g*j)
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(538+jx)}dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)(538+jx)}dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{h\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(538h-gj)(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(538h-gj)(538+jx)}\right)dx, c$$

$$= \text{Subst}\left(\frac{h\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}dx}{538h-gj}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{j\int\right.$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log}{538h-gj}$$

$$= \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g+hx)}{fg-eh}\right)}{538h-gj} - \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log}{538h-gj}$$

<u>Mathematica</u> [B] time = 0.530732, size = 1350, normalized size = 3.29

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)),x]
```

```
[Out] (a^3*Log[g + h*x] - 3*a^2*b*p*q*Log[e + f*x]*Log[g + h*x] + 3*a*b^2*p^2*q^2
*Log[e + f*x]^2*Log[g + h*x] - b^3*p^3*q^3*Log[e + f*x]^3*Log[g + h*x] + 3*
a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[g + h*x] - 6*a*b^2*p*q*Log[e + f*x]*Log[
c*(d*(e + f*x)^p)^q]*Log[g + h*x] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(
e + f*x)^p)^q]*Log[g + h*x] + 3*a*b^2*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*
x] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[g + h*x] + b^3*L
og[c*(d*(e + f*x)^p)^q]^3*Log[g + h*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[(f*(g
 + h*x))/(f*g - e*h)] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[(f*(g + h*x))/(f
```

```
*g - e*h)] + b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 6*
a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x))/(f*g - e*
h)] - 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[(f*(g + h*x
))/(f*g - e*h)] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]^2*Log[(f*
(g + h*x))/(f*g - e*h)] - a^3*Log[i + j*x] + 3*a^2*b*p*q*Log[e + f*x]*Log[i
 + j*x] - 3*a*b^2*p^2*q^2*Log[e + f*x]^2*Log[i + j*x] + b^3*p^3*q^3*Log[e +
 f*x]^3*Log[i + j*x] - 3*a^2*b*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] + 6*a*
b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - 3*b^3*p^2*q^2*
Log[e + f*x]^2*Log[c*(d*(e + f*x)^p)^q]*Log[i + j*x] - 3*a*b^2*Log[c*(d*(e
+ f*x)^p)^q]^2*Log[i + j*x] + 3*b^3*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^
q]^2*Log[i + j*x] - b^3*Log[c*(d*(e + f*x)^p)^q]^3*Log[i + j*x] - 3*a^2*b*p
*q*Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + 3*a*b^2*p^2*q^2*Log[e + f*
x]^2*Log[(f*(i + j*x))/(f*i - e*j)] - b^3*p^3*q^3*Log[e + f*x]^3*Log[(f*(i
+ j*x))/(f*i - e*j)] - 6*a*b^2*p*q*Log[e + f*x]*Log[c*(d*(e + f*x)^p)^q]*Lo
g[(f*(i + j*x))/(f*i - e*j)] + 3*b^3*p^2*q^2*Log[e + f*x]^2*Log[c*(d*(e + f
*x)^p)^q]*Log[(f*(i + j*x))/(f*i - e*j)] - 3*b^3*p*q*Log[e + f*x]*Log[c*(d*
(e + f*x)^p)^q]^2*Log[(f*(i + j*x))/(f*i - e*j)] + 3*b*p*q*(a + b*Log[c*(d*
(e + f*x)^p)^q])^2*PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)] - 3*b*p*q*(a +
b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 6*
a*b^2*p^2*q^2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^3*p^2*q^2*Log[
c*(d*(e + f*x)^p)^q]*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)] + 6*a*b^2*p^2
*q^2*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)] + 6*b^3*p^2*q^2*Log[c*(d*(e +
 f*x)^p)^q]*PolyLog[3, (j*(e + f*x))/(-(f*i) + e*j)] + 6*b^3*p^3*q^3*PolyLo
g[4, (h*(e + f*x))/(-(f*g) + e*h)] - 6*b^3*p^3*q^3*PolyLog[4, (j*(e + f*x))
/(-(f*i) + e*j)])/(h*i - g*j)
```

Maple [F] time = 1.066, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{3}\left(\frac{\log\left(hx+g\right)}{hi-gj}-\frac{\log\left(jx+i\right)}{hi-gj}\right)+\int \frac{b^{3}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{3}+3\left(\log\left(c\right)^{2}+2\log\left(c\right)\log\left(d^{q}\right)+\log\left(d^{q}\right)^{2}\right)ab^{2}+\left(\log\left(c\right)^{3}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="maxi
ma")
```

```
[Out] a^3*(log(h*x + g)/(h*i - g*j) - log(j*x + i)/(h*i - g*j)) + integrate((b^3*
log(((f*x + e)^p)^q)^3 + 3*(log(c)^2 + 2*log(c)*log(d^q) + log(d^q)^2)*a*b^
2 + (log(c)^3 + 3*log(c)^2*log(d^q) + 3*log(c)*log(d^q)^2 + log(d^q)^3)*b^3
 + 3*a^2*b*(log(c) + log(d^q)) + 3*(b^3*(log(c) + log(d^q)) + a*b^2)*log(((
```

```
f*x + e)^p)^q)^2 + 3*((log(c)^2 + 2*log(c)*log(d^q) + log(d^q)^2)*b^3 + 2*a
*b^2*(log(c) + log(d^q)) + a^2*b)*log(((f*x + e)^p)^q))/(h*j*x^2 + g*i + (h
*i + g*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hjx^2+gi+\left(hi+gj\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="fric
as")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*j*x^2 + g*i + (h*i + g*j)*x
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)/(j*x+i),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{\left(hx+g\right)\left(jx+i\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i),x, algorithm="giac
")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/((h*x + g)*(j*x + i)), x)
```

3.539 $\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(i+jx)^2}\,dx$

Optimal. Leaf size=659

$$\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fi-ej)(hi-gj)}-\frac{6b^2hp^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{(hi-gj)^2}$$

```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log
[(f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d
*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (3*b*h*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/(h*i - g*j)^2 + (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Pol
yLog[2, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) - (3*b*h*p
*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j
))])/(h*i - g*j)^2 - (6*b^2*h*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 - (6*b^3*f*p^3*q^3*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) + (6*b^2*h*
p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2 + (6*b^3*h*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (6*b^3*h*p^3*q^3*PolyLog[4, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2
```

Rubi [A] time = 1.71566, antiderivative size = 659, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {2418, 2396, 2433, 2374, 2383, 6589, 2397, 2445}

$$\frac{6b^2fp^2q^2\text{PolyLog}\left(2,-\frac{j(e+fx)}{fi-ej}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}{(fi-ej)(hi-gj)}-\frac{6b^2hp^2q^2\text{PolyLog}\left(3,-\frac{h(e+fx)}{fg-eh}\right)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right.\right.}{(hi-gj)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)^2),x]
```


```
[Out] -((j*(e + f*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^3)/((f*i - e*j)*(h*i - g*j)
*(i + j*x))) + (h*(a + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[(f*(g + h*x))/(f*g
 - e*h)])/(h*i - g*j)^2 + (3*b*f*p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*Log
[(f*(i + j*x))/(f*i - e*j)])/((f*i - e*j)*(h*i - g*j)) - (h*(a + b*Log[c*(d
*(e + f*x)^p)^q])^3*Log[(f*(i + j*x))/(f*i - e*j)])/(h*i - g*j)^2 + (3*b*h*
p*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((h*(e + f*x))/(f*g - e*
h))])/(h*i - g*j)^2 + (6*b^2*f*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Pol
yLog[2, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) - (3*b*h*p
*q*(a + b*Log[c*(d*(e + f*x)^p)^q])^2*PolyLog[2, -((j*(e + f*x))/(f*i - e*j
))])/(h*i - g*j)^2 - (6*b^2*h*p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*Poly
Log[3, -((h*(e + f*x))/(f*g - e*h))])/(h*i - g*j)^2 - (6*b^3*f*p^3*q^3*Poly
Log[3, -((j*(e + f*x))/(f*i - e*j))])/((f*i - e*j)*(h*i - g*j)) + (6*b^2*h*
p^2*q^2*(a + b*Log[c*(d*(e + f*x)^p)^q])*PolyLog[3, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2 + (6*b^3*h*p^3*q^3*PolyLog[4, -((h*(e + f*x))/(f*g -
e*h))])/(h*i - g*j)^2 - (6*b^3*h*p^3*q^3*PolyLog[4, -((j*(e + f*x))/(f*i -
e*j))])/(h*i - g*j)^2
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2383

```
Int[(((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)*PolyLog[k_, (e_.)*(x_)^(q_
.)])/(x_), x_Symbol] :> Simp[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^p)/q
, x] - Dist[(b*n*p)/q, Int[(PolyLog[k + 1, e*x^q]*(a + b*Log[c*x^n])^(p - 1
))/x, x], x] /; FreeQ[{a, b, c, e, k, n, q}, x] && GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 2397

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_))^2, x_Symbol] :> Simp[((d + e*x)*(a + b*Log[c*(d + e*x)^n])^p)/((e*f
 - d*g)*(f + g*x)), x] - Dist[(b*e*n*p)/(e*f - d*g), Int[(a + b*Log[c*(d +
e*x)^n])^(p - 1)/(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] &&
 NeQ[e*f - d*g, 0] && GtQ[p, 0]
```

Rule 2445

```
Int[((a_.) + Log[(c_.)*((d_.)*((e_.) + (f_.)*(x_))^(m_.))^(n_)]*(b_.))^(p_.
)*(u_.), x_Symbol] :> Subst[Int[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x],
 c*d^n*(e + f*x)^(m*n), c*(d*(e + f*x)^m)^n] /; FreeQ[{a, b, c, d, e, f, m,
 n, p}, x] &&  !IntegerQ[n] &&  !(EqQ[d, 1] && EqQ[m, 1]) && IntegralFreeQ[
IntHide[u*(a + b*Log[c*d^n*(e + f*x)^(m*n)])^p, x]]
```

Rubi steps

$$\int \frac{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(g+hx)(539+jx)^2}\,dx = \text{Subst}\left(\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(g+hx)(539+jx)^2}\,dx, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right)$$

$$= \text{Subst}\left(\int \left(\frac{h^2\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(539h-gj)^2(g+hx)} - \frac{j\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{(539h-gj)(539+jx)^2} - \frac{hj\left(a\right.}{(5}\right.\right.$$

$$= \text{Subst}\left(\frac{h^2\int \frac{\left(a+b\log\left(cd^q(e+fx)^{pq}\right)\right)^3}{g+hx}dx}{(539h-gj)^2}, cd^q(e+fx)^{pq}, c\left(d(e+fx)^p\right)^q\right) - \text{Subst}\left(\frac{(hj)\int}{}\right.$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g}{fg}\right.}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g}{fg}\right.}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g}{fg}\right.}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g}{fg}\right.}{(539h-gj)^2}$$

$$= -\frac{j(e+fx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3}{(539f-ej)(539h-gj)(539+jx)} + \frac{h\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^3\log\left(\frac{f(g}{fg}\right.}{(539h-gj)^2}$$

Mathematica [A] time = 1.83126, size = 1057, normalized size = 1.6

$$\frac{-b^3p^3\left((hi-gj)\left(\left(j(e+fx)\log(e+fx)-3f(i+jx)\log\left(\frac{f(i+jx)}{fi-ej}\right)\right)\log^2(e+fx)-6f(i+jx)\text{PolyLog}\left(2,\frac{j(e+fx)}{ej-fi}\right)\log(e+fx\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Log[c*(d*(e + f*x)^p)^q])^3/((g + h*x)*(i + j*x)^2),x]
```

```
[Out] ((f*i - e*j)*(h*i - g*j)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f*x)^p)^
q])^3 + h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x] + b*Log[c*(d*(e + f
```

```
*x)^p)^q])^3*Log[g + h*x] - h*(f*i - e*j)*(i + j*x)*(a - b*p*q*Log[e + f*x]
 + b*Log[c*(d*(e + f*x)^p)^q])^3*Log[i + j*x] - 3*b*p*q*(a - b*p*q*Log[e +
f*x] + b*Log[c*(d*(e + f*x)^p)^q])^2*((h*i - g*j)*(j*(e + f*x)*Log[e + f*x]
 - f*(i + j*x)*Log[i + j*x]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f
*(g + h*x))/(f*g - e*h)] + PolyLog[2, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f
*i - e*j)*(i + j*x)*(Log[e + f*x]*Log[(f*(i + j*x))/(f*i - e*j)] + PolyLog[
2, (j*(e + f*x))/(-(f*i) + e*j)])) - 3*b^2*p^2*q^2*(a - b*p*q*Log[e + f*x]
+ b*Log[c*(d*(e + f*x)^p)^q])*((h*i - g*j)*(Log[e + f*x]*(j*(e + f*x)*Log[e
 + f*x] - 2*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) - 2*f*(i + j*x)*Pol
yLog[2, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f
*x]^2*Log[(f*(g + h*x))/(f*g - e*h)] + 2*Log[e + f*x]*PolyLog[2, (h*(e + f*
x))/(-(f*g) + e*h)] - 2*PolyLog[3, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i
- e*j)*(i + j*x)*(Log[e + f*x]^2*Log[(f*(i + j*x))/(f*i - e*j)] + 2*Log[e +
 f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] - 2*PolyLog[3, (j*(e + f*x))
/(-(f*i) + e*j)])) - b^3*p^3*q^3*((h*i - g*j)*(Log[e + f*x]^2*(j*(e + f*x)*
Log[e + f*x] - 3*f*(i + j*x)*Log[(f*(i + j*x))/(f*i - e*j)]) - 6*f*(i + j*x
)*Log[e + f*x]*PolyLog[2, (j*(e + f*x))/(-(f*i) + e*j)] + 6*f*(i + j*x)*Pol
yLog[3, (j*(e + f*x))/(-(f*i) + e*j)]) - h*(f*i - e*j)*(i + j*x)*(Log[e + f
*x]^3*Log[(f*(g + h*x))/(f*g - e*h)] + 3*Log[e + f*x]^2*PolyLog[2, (h*(e +
f*x))/(-(f*g) + e*h)] - 6*Log[e + f*x]*PolyLog[3, (h*(e + f*x))/(-(f*g) + e
*h)] + 6*PolyLog[4, (h*(e + f*x))/(-(f*g) + e*h)]) + h*(f*i - e*j)*(i + j*x
)*(Log[e + f*x]^3*Log[(f*(i + j*x))/(f*i - e*j)] + 3*Log[e + f*x]^2*PolyLog
[2, (j*(e + f*x))/(-(f*i) + e*j)] - 6*Log[e + f*x]*PolyLog[3, (j*(e + f*x))
/(-(f*i) + e*j)] + 6*PolyLog[4, (j*(e + f*x))/(-(f*i) + e*j)])))/((f*i - e*
j)*(h*i - g*j)^2*(i + j*x))
```

Maple [F] time = 1.011, size = 0, normalized size = 0.

$$\int \frac{\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^{3}}{\left(hx+g\right)\left(jx+i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x)
```

```
[Out] int((a+b*ln(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^{3}\left(\frac{h\log\left(hx+g\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}-\frac{h\log\left(jx+i\right)}{h^{2}i^{2}-2\,ghij+g^{2}j^{2}}+\frac{1}{hi^{2}-gij+\left(hij-gj^{2}\right)x}\right)+\int\frac{b^{3}\log\left(\left(\left(fx+e\right)^{p}\right)^{q}\right)^{3}+3\left(\log\left(c\right)^{2}+2\,\mathrm{l}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="ma
xima")
```

```
[Out] a^3*(h*log(h*x + g)/(h^2*i^2 - 2*g*h*i*j + g^2*j^2) - h*log(j*x + i)/(h^2*i
^2 - 2*g*h*i*j + g^2*j^2) + 1/(h*i^2 - g*i*j + (h*i*j - g*j^2)*x)) + integr
ate((b^3*log(((f*x + e)^p)^q)^3 + 3*(log(c)^2 + 2*log(c)*log(d^q) + log(d^q
)^2)*a*b^2 + (log(c)^3 + 3*log(c)^2*log(d^q) + 3*log(c)*log(d^q)^2 + log(d^
```

```
q)^3)*b^3 + 3*a^2*b*(log(c) + log(d^q)) + 3*(b^3*(log(c) + log(d^q)) + a*b^
2)*log(((f*x + e)^p)^q)^2 + 3*((log(c)^2 + 2*log(c)*log(d^q) + log(d^q)^2)*
b^3 + 2*a*b^2*(log(c) + log(d^q)) + a^2*b)*log(((f*x + e)^p)^q))/(h*j^2*x^3
 + g*i^2 + (2*h*i*j + g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{b^3\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^3+3\,ab^2\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+3\,a^2b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a^3}{hj^2x^3+gi^2+\left(2\,hij+gj^2\right)x^2+\left(hi^2+2\,gij\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="fr
icas")
```

```
[Out] integral((b^3*log(((f*x + e)^p*d)^q*c)^3 + 3*a*b^2*log(((f*x + e)^p*d)^q*c)
^2 + 3*a^2*b*log(((f*x + e)^p*d)^q*c) + a^3)/(h*j^2*x^3 + g*i^2 + (2*h*i*j
+ g*j^2)*x^2 + (h*i^2 + 2*g*i*j)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*ln(c*(d*(f*x+e)**p)**q))**3/(h*x+g)/(j*x+i)**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^3}{\left(hx+g\right)\left(jx+i\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*log(c*(d*(f*x+e)^p)^q))^3/(h*x+g)/(j*x+i)^2,x, algorithm="gi
ac")
```

```
[Out] integrate((b*log(((f*x + e)^p*d)^q*c) + a)^3/((h*x + g)*(j*x + i)^2), x)
```

3.540 $\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=35

$$\text{Unintegrable}\left(\frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.259818, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{540+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{540+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.341198, size = 0, normalized size = 0.

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.63, size = 0, normalized size = 0.

$$\int \frac{jx+i}{\left(hx+g\right)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{jx+i}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima
")
```

```
[Out] integrate((j*x + i)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{jx+i}{ahx+ag+(bhx+bg)\log\left(\left((fx+e)^p d\right)^q c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas
")
```

```
[Out] integral((j*x + i)/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)),
x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{i+jx}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)(g+hx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Integral((i + j*x)/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{jx+i}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")
```

```
[Out] integrate((j*x + i)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.541 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.0706707, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 0.0290962, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.057, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)

[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxima")

[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ahx+ag+(bhx+bg)\log\left(\left((fx+e)^p d\right)^q c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fricas")

[Out] integral(1/(a*h*x + a*g + (b*h*x + b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)(g+hx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)

[Out] Integral(1/((a + b*log(c*(d*(e + f*x)**p)**q))*(g + h*x)), x)
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac")

[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.542 $\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=37

$$\text{Unintegrable}\left(\frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.302049, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(542+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)(542+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 1.00914, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.997, size = 0, normalized size = 0.

$$\int \frac{1}{(jx+i)(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="maxi
ma")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ahjx^2+agi+(ahi+agj)x+\left(bhjx^2+bgi+(bhi+bgj)x\right)\log\left(\left((fx+e)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fric
as")
```

```
[Out] integral(1/(a*h*j*x^2 + a*g*i + (a*h*i + a*g*j)*x + (b*h*j*x^2 + b*g*i + (b
*h*i + b*g*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="giac
")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.543 $\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$

Optimal. Leaf size=37

$$\text{Unintegrable}\left(\frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi [A] time = 0.34051, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$, Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(543+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx=\int \frac{1}{(g+hx)(543+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Mathematica [A] time = 4.16664, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])),x]
```

```
[Out] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])), x]
```

Maple [A] time = 0.994, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\,(jx+i)^2\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="ma
xima")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{ahj^2x^3 + agi^2 + \left(2\,ahij + agj^2\right)x^2 + \left(ahi^2 + 2\,agij\right)x + \left(bhj^2x^3 + bgi^2 + \left(2\,bhij + bgj^2\right)x^2 + \left(bhi^2 + 2\,bgij\right)x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="fr
icas")
```

```
[Out] integral(1/(a*h*j^2*x^3 + a*g*i^2 + (2*a*h*i*j + a*g*j^2)*x^2 + (a*h*i^2 +
2*a*g*i*j)*x + (b*h*j^2*x^3 + b*g*i^2 + (2*b*h*i*j + b*g*j^2)*x^2 + (b*h*i^
2 + 2*b*g*i*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)**2/(a+b*ln(c*(d*(f*x+e)**p)**q)),x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q)),x, algorithm="gi
ac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)), x)
```

3.544 $\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=35

$$\text{Unintegrable}\left(\frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi [A] time = 0.298996, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{544+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{544+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 2.98509, size = 0, normalized size = 0.

$$\int \frac{i+jx}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[(i + j*x)/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A] time = 0.626, size = 0, normalized size = 0.

$$\int \frac{jx+i}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\frac{fjx^2 + ei + (fi + ej)x}{abfgpq + (fgpq\log(c) + fgpq\log(d^q))b^2 + (abfhpq + (fhpq\log(c) + fhpq\log(d^q))b^2)x + (b^2fhpqx + b^2fgpq)\log(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxi
ma")
```

```
[Out] -(f*j*x^2 + e*i + (f*i + e*j)*x)/(a*b*f*g*p*q + (f*g*p*q*log(c) + f*g*p*q*l
og(d^q))*b^2 + (a*b*f*h*p*q + (f*h*p*q*log(c) + f*h*p*q*log(d^q))*b^2)*x +
(b^2*f*h*p*q*x + b^2*f*g*p*q)*log(((f*x + e)^p)^q)) + integrate((f*h*j*x^2
+ 2*f*g*j*x + f*g*i - (h*i - g*j)*e)/(a*b*f*g^2*p*q + (f*g^2*p*q*log(c) + f
*g^2*p*q*log(d^q))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q*log(c) + f*h^2*p*q*log
(d^q))*b^2)*x^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q*log(c) + f*g*h*p*q*log(d^q)
)*b^2)*x + (b^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*
x + e)^p)^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{jx + i}{a^2hx + a^2g + (b^2hx + b^2g)\log\left(\left((fx + e)^p d\right)^q c\right)^2 + 2(abhx + abg)\log\left(\left((fx + e)^p d\right)^q c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fric
as")
```

```
[Out] integral((j*x + i)/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)
^q*c)^2 + 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{jx+i}{(hx+g)\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((j*x+i)/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac
")
```

```
[Out] integrate((j*x + i)/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

3.545 $\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=30

$$\text{Unintegrable}\left(\frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi [A] time = 0.0670413, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]

[Out] Defer[Int][1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 0.177161, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]

[Out] Integrate[1/((g + h*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A] time = 0.062, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^{p}\right)^{q}\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$(fg-eh)\int \frac{}{abfg^2pq+\left(fg^2pq\log(c)+fg^2pq\log(d^q)\right)b^2+\left(abfh^2pq+\left(fh^2pq\log(c)+fh^2pq\log(d^q)\right)b^2\right)x^2+2\left(ab\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="maxima")
```

```
[Out] (f*g - e*h)*integrate(1/(a*b*f*g^2*p*q + (f*g^2*p*q*log(c) + f*g^2*p*q*log(
d^q))*b^2 + (a*b*f*h^2*p*q + (f*h^2*p*q*log(c) + f*h^2*p*q*log(d^q))*b^2)*x
^2 + 2*(a*b*f*g*h*p*q + (f*g*h*p*q*log(c) + f*g*h*p*q*log(d^q))*b^2)*x + (b
^2*f*h^2*p*q*x^2 + 2*b^2*f*g*h*p*q*x + b^2*f*g^2*p*q)*log(((f*x + e)^p)^q))
, x) - (f*x + e)/(a*b*f*g*p*q + (f*g*p*q*log(c) + f*g*p*q*log(d^q))*b^2 + (
a*b*f*h*p*q + (f*h*p*q*log(c) + f*h*p*q*log(d^q))*b^2)*x + (b^2*f*h*p*q*x +
 b^2*f*g*p*q)*log(((f*x + e)^p)^q))
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2hx+a^2g+\left(b^2hx+b^2g\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2+2\left(abhx+abg\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*h*x + a^2*g + (b^2*h*x + b^2*g)*log(((f*x + e)^p*d)^q*c)^2
+ 2*(a*b*h*x + a*b*g)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)\left(b\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((h*x + g)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

3.546 $\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=37

$$\text{Unintegrable}\left(\frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi [A] time = 0.294183, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(546+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)(546+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 30.864, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)(i+jx)\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[1/((g + h*x)*(i + j*x)*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A] time = 1.017, size = 0, normalized size = 0.

$$\int \frac{1}{(jx+i)(hx+g)\left(a+b\ln\left(c\left(d\left(fx+e\right)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="ma
xima")
```

```
[Out] -(f*x + e)/(a*b*f*g*i*p*q + (f*g*i*p*q*log(c) + f*g*i*p*q*log(d^q))*b^2 + (
a*b*f*h*j*p*q + (f*h*j*p*q*log(c) + f*h*j*p*q*log(d^q))*b^2)*x^2 + ((h*i*q
+ g*j*q)*a*b*f*p + ((h*i*q + g*j*q)*f*p*log(c) + (h*i*q + g*j*q)*f*p*log(d^
q))*b^2)*x + (b^2*f*h*j*p*q*x^2 + b^2*f*g*i*p*q + (h*i*q + g*j*q)*b^2*f*p*x
)*log(((f*x + e)^p)^q)) - integrate((f*h*j*x^2 + 2*e*h*j*x - f*g*i + (h*i +
 g*j)*e)/(a*b*f*g^2*i^2*p*q + (a*b*f*h^2*j^2*p*q + (f*h^2*j^2*p*q*log(c) +
f*h^2*j^2*p*q*log(d^q))*b^2)*x^4 + 2*((h^2*i*j*q + g*h*j^2*q)*a*b*f*p + ((h
^2*i*j*q + g*h*j^2*q)*f*p*log(c) + (h^2*i*j*q + g*h*j^2*q)*f*p*log(d^q))*b^
2)*x^3 + (f*g^2*i^2*p*q*log(c) + f*g^2*i^2*p*q*log(d^q))*b^2 + ((h^2*i^2*q
+ 4*g*h*i*j*q + g^2*j^2*q)*a*b*f*p + ((h^2*i^2*q + 4*g*h*i*j*q + g^2*j^2*q)
*f*p*log(c) + (h^2*i^2*q + 4*g*h*i*j*q + g^2*j^2*q)*f*p*log(d^q))*b^2)*x^2
+ 2*((g*h*i^2*q + g^2*i*j*q)*a*b*f*p + ((g*h*i^2*q + g^2*i*j*q)*f*p*log(c)
+ (g*h*i^2*q + g^2*i*j*q)*f*p*log(d^q))*b^2)*x + (b^2*f*h^2*j^2*p*q*x^4 + b
^2*f*g^2*i^2*p*q + 2*(h^2*i*j*q + g*h*j^2*q)*b^2*f*p*x^3 + (h^2*i^2*q + 4*g
*h*i*j*q + g^2*j^2*q)*b^2*f*p*x^2 + 2*(g*h*i^2*q + g^2*i*j*q)*b^2*f*p*x)*lo
g(((f*x + e)^p)^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{a^2hjx^2 + a^2gi + \left(b^2hjx^2 + b^2gi + \left(b^2hi + b^2gj\right)x\right)\log\left(\left(\left(fx+e\right)^p d\right)^q c\right)^2 + \left(a^2hi + a^2gj\right)x + 2\left(abhjx^2 + abgi + \left(\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="fr
icas")
```

```
[Out] integral(1/(a^2*h*j*x^2 + a^2*g*i + (b^2*h*j*x^2 + b^2*g*i + (b^2*h*i + b^2
*g*j)*x)*log(((f*x + e)^p*d)^q*c)^2 + (a^2*h*i + a^2*g*j)*x + 2*(a*b*h*j*x^
2 + a*b*g*i + (a*b*h*i + a*b*g*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)\left(b\log\left(\left(\left(fx+e\right)^{p}d\right)^{q}c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="gi
ac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

3.547 $\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$

Optimal. Leaf size=37

$$\text{Unintegrable}\left(\frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2},x\right)$$

```
[Out] Unintegrable[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),
x]
```

Rubi [A] time = 0.334712, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0., Rules used = {}

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Defer[Int][1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Rubi steps

$$\int \frac{1}{(g+hx)(547+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx=\int \frac{1}{(g+hx)(547+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Mathematica [A] time = 48.1609, size = 0, normalized size = 0.

$$\int \frac{1}{(g+hx)(i+jx)^2\left(a+b\log\left(c\left(d(e+fx)^p\right)^q\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2),x]
```

```
[Out] Integrate[1/((g + h*x)*(i + j*x)^2*(a + b*Log[c*(d*(e + f*x)^p)^q])^2), x]
```

Maple [A] time = 1.008, size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)^2\left(a+b\ln\left(c\left(d(fx+e)^p\right)^q\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

```
[Out] int(1/(h*x+g)/(j*x+i)^2/(a+b*ln(c*(d*(f*x+e)^p)^q))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
maxima")
```

```
[Out] -(f*x + e)/(a*b*f*g*i^2*p*q + (a*b*f*h*j^2*p*q + (f*h*j^2*p*q*log(c) + f*h*
j^2*p*q*log(d^q))*b^2)*x^3 + (f*g*i^2*p*q*log(c) + f*g*i^2*p*q*log(d^q))*b^
2 + ((2*h*i*j*q + g*j^2*q)*a*b*f*p + ((2*h*i*j*q + g*j^2*q)*f*p*log(c) + (2
*h*i*j*q + g*j^2*q)*f*p*log(d^q))*b^2)*x^2 + ((h*i^2*q + 2*g*i*j*q)*a*b*f*p
 + ((h*i^2*q + 2*g*i*j*q)*f*p*log(c) + (h*i^2*q + 2*g*i*j*q)*f*p*log(d^q))*
b^2)*x + (b^2*f*h*j^2*p*q*x^3 + b^2*f*g*i^2*p*q + (2*h*i*j*q + g*j^2*q)*b^2
*f*p*x^2 + (h*i^2*q + 2*g*i*j*q)*b^2*f*p*x)*log(((f*x + e)^p)^q)) - integra
te((2*f*h*j*x^2 - f*g*i + (h*i + 2*g*j)*e + (f*g*j + 3*e*h*j)*x)/(a*b*f*g^2
*i^3*p*q + (a*b*f*h^2*j^3*p*q + (f*h^2*j^3*p*q*log(c) + f*h^2*j^3*p*q*log(d
^q))*b^2)*x^5 + ((3*h^2*i*j^2*q + 2*g*h*j^3*q)*a*b*f*p + ((3*h^2*i*j^2*q +
2*g*h*j^3*q)*f*p*log(c) + (3*h^2*i*j^2*q + 2*g*h*j^3*q)*f*p*log(d^q))*b^2)*
x^4 + ((3*h^2*i^2*j*q + 6*g*h*i*j^2*q + g^2*j^3*q)*a*b*f*p + ((3*h^2*i^2*j*
q + 6*g*h*i*j^2*q + g^2*j^3*q)*f*p*log(c) + (3*h^2*i^2*j*q + 6*g*h*i*j^2*q
+ g^2*j^3*q)*f*p*log(d^q))*b^2)*x^3 + (f*g^2*i^3*p*q*log(c) + f*g^2*i^3*p*q
*log(d^q))*b^2 + ((h^2*i^3*q + 6*g*h*i^2*j*q + 3*g^2*i*j^2*q)*a*b*f*p + ((h
^2*i^3*q + 6*g*h*i^2*j*q + 3*g^2*i*j^2*q)*f*p*log(c) + (h^2*i^3*q + 6*g*h*i
^2*j*q + 3*g^2*i*j^2*q)*f*p*log(d^q))*b^2)*x^2 + ((2*g*h*i^3*q + 3*g^2*i^2*
j*q)*a*b*f*p + ((2*g*h*i^3*q + 3*g^2*i^2*j*q)*f*p*log(c) + (2*g*h*i^3*q + 3
*g^2*i^2*j*q)*f*p*log(d^q))*b^2)*x + (b^2*f*h^2*j^3*p*q*x^5 + b^2*f*g^2*i^3
*p*q + (3*h^2*i*j^2*q + 2*g*h*j^3*q)*b^2*f*p*x^4 + (3*h^2*i^2*j*q + 6*g*h*i
*j^2*q + g^2*j^3*q)*b^2*f*p*x^3 + (h^2*i^3*q + 6*g*h*i^2*j*q + 3*g^2*i*j^2*
q)*b^2*f*p*x^2 + (2*g*h*i^3*q + 3*g^2*i^2*j*q)*b^2*f*p*x)*log(((f*x + e)^p)
^q)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{}{a^2hj^2x^3 + a^2gi^2 + \left(2\,a^2hij + a^2gj^2\right)x^2 + \left(b^2hj^2x^3 + b^2gi^2 + \left(2\,b^2hij + b^2gj^2\right)x^2 + \left(b^2hi^2 + 2\,b^2gij\right)x\right)\log\left(\left(\left(f\right.\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
fricas")
```

```
[Out] integral(1/(a^2*h*j^2*x^3 + a^2*g*i^2 + (2*a^2*h*i*j + a^2*g*j^2)*x^2 + (b^
2*h*j^2*x^3 + b^2*g*i^2 + (2*b^2*h*i*j + b^2*g*j^2)*x^2 + (b^2*h*i^2 + 2*b^
2*g*i*j)*x)*log(((f*x + e)^p*d)^q*c)^2 + (a^2*h*i^2 + 2*a^2*g*i*j)*x + 2*(a
```

```
*b*h*j^2*x^3 + a*b*g*i^2 + (2*a*b*h*i*j + a*b*g*j^2)*x^2 + (a*b*h*i^2 + 2*a
*b*g*i*j)*x)*log(((f*x + e)^p*d)^q*c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)**2/(a+b*ln(c*(d*(f*x+e)**p)**q))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(hx+g)(jx+i)^2\left(b\log\left(\left((fx+e)^p d\right)^q c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(h*x+g)/(j*x+i)^2/(a+b*log(c*(d*(f*x+e)^p)^q))^2,x, algorithm="
giac")
```

```
[Out] integrate(1/((h*x + g)*(j*x + i)^2*(b*log(((f*x + e)^p*d)^q*c) + a)^2), x)
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
```

```
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
```

```
AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
    debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
    ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
```

```
                print("both result and optimal complex");
             fi;
             #both result and optimal complex
             if leaf_count_result<=2*leaf_count_optimal then
                return "A";
             else
                return "B";
             end if
          else #result contains complex but optimal is not
             if debug then
                print("result contains complex but optimal is not");
             fi;
             return "C";
          end if
       else # result do not contain complex
            # this assumes optimal do not as well
            if debug then
                print("result do not contain complex, this assumes optimal do
    not as well");
            fi;
            if leaf_count_result<=2*leaf_count_optimal then
               if debug then
                  print("leaf_count_result<=2*leaf_count_optimal");
               fi;
               return "A";
            else
               if debug then
                  print("leaf_count_result>2*leaf_count_optimal");
               fi;
               return "B";
            end if
       end if
  else #ExpnType(result) > ExpnType(optimal)
       if debug then
          print("ExpnType(result) > ExpnType(optimal)");
       fi;
       return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
```

```
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
```

```
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]

def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
```

```
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
    )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
    ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
    type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
    expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
    ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
```

```
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

def tree(expr):
    debug=False;
    if debug:
         print ("Enter tree(expr), expr=",expr)
         print ("expr.operator()=",expr.operator())
         print ("expr.operands()=",expr.operands())
         print ("map(tree, expr.operands()=",map(tree, expr.operands()))

    if expr.operator() is None:
        return expr
    else:
        return [expr.operator()]+list(map(tree, expr.operands()))

def leaf_count(anti):
    debug=False;

    if debug: print ("Enter leaf_count, anti=", anti, " len(anti)=", len(anti))

    if len(anti) == 0: #special check for optimal being 0 for some test cases.
       if debug: print ("len(anti) == 0")
       return 1
    else:
        if debug: print ("round(1.35*len(flatten(tree(anti))))=",round(1.35*len(flatten(tree(anti)))))
        return round(1.35*len(flatten(tree(anti)))) #fudge factor
                     #since this estimate of leaf count is bit lower than
```

```
                      #what it should be compared to Mathematica's

def is_sqrt(expr):
    debug=False;
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug = False

    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug = False

    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in sagemath

```

```
def is_atom(expn):

    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
   sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
   :
            return expn in expn.parent().base_ring() or expn in expn.parent().
   gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):
    debug=False

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
   Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
   args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
   )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
   Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
   Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
   expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
   [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
   isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
   .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
   expn.args)))
```

```
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):
    debug = False;

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=", expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```